



SUB-COMMITTEE ON
RADIOCOMMUNICATIONS
40th session
Agenda item 22

REPORT TO THE MARITIME SAFETY COMMITTEE

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For reasons of economy, this document is printed in a limited number. Delegates are kindly asked to bring their copies to meetings and not to request additional copies.

ANNEX 1

**AGENDA OF THE FORTIETH SESSION
INCLUDING A LIST OF DOCUMENTS**

1 Adoption of the Agenda

COM 40/1	-	Secretariat
COM 40/1/1	-	Secretariat

2 Decisions of other IMO bodies

COM 40/2	-	Secretariat
COM 40/2/1	-	Secretariat

3 Role of the human element in maritime casualties

No documents submitted

4 Global Maritime Distress and Safety System (GMDSS)

COM 40/4	-	Working Group
COM 40/4/1	-	Secretariat
COM 40/4/2	-	United States
COM 40/4/3	-	Secretariat
COM 40/4/4/Rev.1	-	Secretariat
COM 40/4/5	-	IEC
COM 40/4/6	-	United States
COM 40/4/7	-	United Kingdom
COM 40/4/8 (MSC 64/INF.6)	-	United Kingdom
COM 40/4/9	-	United Kingdom
COM 40/4/10	-	Germany
COM 40/4/11	-	Sweden
COM 40/4/12	-	Sweden
COM 40/4/13	-	France
COM 40/4/14	-	Secretariat
COM 40/4/15	-	CIRM
COM 40/4/16	-	Denmark
COM 40/4/17	-	Norway
COM 40/INF.3	-	United Kingdom
COM 40/WP.2	-	Working Group
COM 40/WP.2/Add.1	-	Working Group

5 **Proclamation of Maritime Safety Information (MSI)**

COM 40/5	-	IEC
COM 40/INF.2	-	IEC
COM 40/INF.2/Add.1	-	IMO
COM 40/INF.7	-	United States
COM 40/INF.17	-	Marshall
COM 40/WP.2	-	Working Group

6 **Performance standards for shipborne radio equipment and review of GMDSS equipment performance**

COM 40/6	-	Working Group
COM 40/6/1	-	Australia
COM 40/6/2	-	Australia
COM 40/6/3	-	Australia
COM 40/6/4	-	Australia
COM 40/6/5	-	IEC
COM 40/6/6	-	IEC
COM 40/6/7	-	United Kingdom
COM 40/6/8	-	United Kingdom
COM 40/6/9	-	Germany
COM 40/6/10	-	Germany
COM 40/6/11	-	CIAM
COM 40/6/12	-	Russian Federation
COM 40/6/13	-	Sweden
COM 40/6/14	-	Norway
COM 40/6/15	-	International Maritime Organization
COM 40/INF.11	-	IEC
COM 40/WP.3	-	Working Group

7 **ITU World radiocommunication conference matters**

COM 40/7	-	United States
COM 40/7/1	-	Greece
COM 40/7/2	-	Denmark
COM 40/7/3	-	Denmark
COM 40/7/4	-	United States
COM 40/7/5	-	Secretary
COM 40/7/6	-	United Kingdom
MSC 63/9/2	-	Chairman
COM 40/WP.4	-	Drafting Group
COM 40/WP.6	-	Drafting Group

8 Radiocommunication ITU-R Study Group 8 matter

COM 40/8	-	United States
COM 40/8/1	-	Secretariat
COM 40/8/1/Add.1	-	Secretariat
COM 40/INF.5	-	Secretariat
COM 40/INF.8	-	Secretariat
COM 40/INF.10	-	Secretariat
COM 40/WP.3	-	Working Group
COM 40/WP.7	-	Secretariat

9 Satellite services (Inmarsat and COSPAS- SARSAT)

COM 40/9	-	COSPAS-SARSAT
COM 40/9/1	-	COSPAS-SARSAT
COM 40/INF.6	-	United States
COM 40/INF.9/Rev.1	-	COSPAS-SARSAT
COM 40/INF.14	-	Inmarsat
COM 40/INF.15	-	Inmarsat
COM 40/INF.16	-	Inmarsat

10 International Code of Signals

NAV 40/INF.16	-	ICRC
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11 Ship identification

COM 40/11	-	Russian Federation
COM 40/11/1	-	United States
COM 40/11/2	-	United States
COM 40/11/3	-	United Kingdom
COM 40/11/4	-	United States
COM 40/11/5	-	United Kingdom
COM 40/INF.13	-	Norway
COM 40/INF.18	-	Secretariat
COM 40/WP.3	-	Working Group
COM 40/WP.5	-	Drafting Group
COM 40/WP.7	-	Secretariat

12 Emergency radiocommunications

COM 40/12	-	United States
COM 40/12/1	-	Australia
COM 40/12/2	-	Australia
COM 40/12/3 (MSC 63/9/1)	-	IEC
COM 40/12/4	-	United Kingdom

21 **Any other business**

No documents submitted

22 **Report to the Maritime Safety Committee**

COM 40/WP.9 and - (Draft report)
COM 40/WP.9/Add.1 Secretariat

COM 40/INF.1 - List of Participants

ANNEX 2

FORMAT FOR SUMMARY OF REPORTS OF EXEMPTIONS FROM RADIO REQUIREMENTS GRANTED
IN ACCORDANCE WITH SOLAS REGULATION IV/3, AS AMENDED IN 1988
(PERIOD 1993-1995)

Year	Number of exemptions	Category of ship		Exemptions granted in accordance with			Reasons and conditions for exemptions granted
		Passenger	Cargo	Regulation IV/3.2.1	Regulation IV/3.2.2	Regulation IV/3.2.3	
1993							Analysis of reports submitted by Administrations. If space is insufficient, analysis will be submitted on a separate sheet or table.
1994							
1995							

ANNEX 3

DRAFT REVISED MSC/CIRC.468/REV.2

**QUESTIONNAIRE ON SHORE-BASED FACILITIES IN THE GLOBAL
MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS)**

- 1 The Maritime Safety Committee, at its sixty-fifth session (9 to 17 May 1995), approved circulation of the revised questionnaire on shore-based facilities in the GMDSS attached hereto. The revised questionnaire includes the requests for information on EPIRB Registration Data and International Point of Contact for national Maritime Mobile Service Identities (MMSIs) which have been circulated to governments by COM/Circ.126 and MSC/Circ.641, respectively.
- 2 Governments, including those which have submitted answers to the previous above-mentioned circulars are invited to provide or update the information as appropriate.
- 3 Administrations should submit information obtained, as appropriate, from national authorities responsible for shore-based facilities for the GMDSS, NAV/MET Area Co-ordinators and search and rescue authorities.
- 4 This questionnaire revokes and replaces MSC/Circ.468/Rev.2, COM/Circ.126 and MSC/Circ.641.

ANNEX 1

Sea Area A1 (Within range of shore-based VHF DSC coverage)

- 1

Does your Administration intend to establish Sea Area A1 ?
If not operational now, indicate date of operation in the following table.

YES

NO

☐

☐

Is it operational now ?

YES

NO

☐

☐
- 2

Do they keep fulltime DSC watch on channel 70 ?
If not, indicate watch hours in the following table.

YES

NO

☐

☐

3 Indicate details of VHF stations								
NAV/ MET Area	Type (Main or Monitor ?) ⁽¹⁾	Name of stations	MMSI	Range ⁽²⁾ (NM)	Date of Operation	Purpose (PC or SD or PS ?) ⁽³⁾	Watch hours (24 hours on CH70 ?)	RCC Associated

(1) Monitored stations mean the stations remotely controlled by the main stations.
(2) Refer to resolution A.704(17). See appendix.
(3) PC = "Public Correspondence" only, SD = "Distress and Safety" only, PS = Both "Public Correspondence" and "Safety and Distress".

- 4 Provide a map indicating:
- Name and location of main VHF stations

- Coverage of main and monitored Transmitter & Receivers

- Name and location of associated RCC(s)

APPENDIX

IMO RESOLUTION A.704(17)^{*}, annex 3, paragraph 2

Criteria for establishing GMDSS sea areas

2.3 Determination of radius A

2.3.1 The following formula should be used to calculate the range A in nautical miles:

$$A=2.5(\sqrt{H(in\text{-}meters)}+\sqrt{h(in\text{-}meters)})$$

H is the height of the coast station VHF receiving antenna and h is the height of the ship's transmitting antenna which is assumed to be 4 m.

^{*} Amendments to this resolution are expected to be adopted by the nineteenth Assembly.

ANNEX 2

Sea Area A2 (Within range of shore-based MF DSC coverage)

- 1

Does your Administration intend to establish Sea Area A2 ?
If not operational now, indicate date of operation in the following table.

YES

NO

Is it operational now ?

YES

NO
- 2

Do they keep fulltime DSC watch on 2187.5 kHz ?
If not, indicate watch hours in the following table.

YES

NO

3 Indicate details of MF stations

NAV/ MET Area	Type (Main or Monitor ?) ⁽¹⁾	Name of stations	MMSI	Range ⁽²⁾ (NM)	Date of Operation	Purpose (PC or SD or PS ?) ⁽³⁾	Watch hours (24 hours on 2187.5 kHz ?)	RCC Associated

(1) Monitored station means the station remotely controlled by the main station.
(2) Refer to resolution A.704(17). See appendix.
(3) PC = "Public Correspondence" only, SD = "Distress and Safety" only, PS = Both "Public Correspondence" and "Safety and Distress".

- 4 Provide a map indicating;
- Name and location of main MF stations

- Coverage of main and monitored Transmitter & Receivers

- Name and location of associated RCC(s)

APPENDIX

IMO RESOLUTION A.704(17)^{*}, annex 3, paragraph 3

Criteria for establishing GMDSS sea areas

3.3 Determination of radius B

The radius B may be determined for each coast station by reference to Recommendation ITU-R PN.368-7 and CCIR Report 322 for the performance of a single sideband(J3E) system under the following conditions:

- | | |
|-------------------------------|---|
| Frequency | - 2182 kHz |
| Bandwidth | - 3 kHz |
| Propagation | - ground wave |
| Time of day & Season | - (Administration should determine time periods and seasons appropriate to their geographic area based on prevailing noise level) |
| Ship's transmitter power(PEP) | - 60 W (See footnote to regulation IV/16(c)(i) of the 1981 amendments to the 1974 SOLAS Convention) |
| Ship's antenna efficiency | - 25 % |
| S/N(RF) | - 9 dB(voice) |
| Mean transmitter power | - 8 dB below peak power |
| Fading margin | - 3 dB |

The range of Sea Area A2 should be verified by field strength measurements.

* Amendments to this resolution are expected to be adopted by the nineteenth Assembly.

ANNEX 3

Sea Area A3 and A4 (Outside of Sea Area A2)

1 Does your Administration intend to equip one or more HF DSC station ? YES ☐ NO ☐ Is it operational now ? YES ☐ NO ☐
If not operational now, indicate date of operation in the following table.

2 Do they keep fulltime DSC watch on the bands ? YES ☐ NO ☐
4MHz (4207.5kHz)? ☐ ☐
6MHz (6312kHz) ? ☐ ☐
8MHz (8414.5kHz)? ☐ ☐
12MHz(12577kHz) ? ☐ ☐
16MHz(16804.5kHz)? ☐ ☐

If not, indicate watch hours in the following table.

3 Indicate details of HF stations											
NAV/ MET Area	Name of stations	MMSI	Date of operation	Purpose (PC or SD or PS ?)*	Operational frequency band					Watch hours (24 hours ?)	RCC Associated
					4	6	8	12	16		

* PC = "Public Correspondence" only, SD = "Distress and Safety" only, PS = Both "Public Correspondence" and "Safety and Distress".

ANNEX 4

Inmarsat facilities

- 1 Does your Administration operate an Inmarsat Coast Earth Station(CES) ?

YES ☐ NO ☐

Is it operational now ?

YES ☐ NO ☐

If not operational now, indicate date of operation in the following table.

- 2 Indicate details of Inmarsat CES

Name of CES	Position	Ocean Area*	Service provided (Date of operation)				RCC Associated
			Inmarsat-A	Inmarsat-B	Inmarsat-C	Inmarsat-E	

* AOR-E(Atlantic Ocean Region - East), AOR-W(Atlantic Ocean Region - West), IOR(Indian Ocean Region) or POR(Pacific Ocean Region)

ANNEX 5

Rescue Co-ordination Centres(RCCs) using Ship Earth Stations(SESs)

1 Does your Administration intend to commission a ship earth station for RCC operation ? YES ☐ NO ☐

Is it operational now ? YES ☐ NO ☐

If not operational now, indicate date of operation in the following table.

2 Indicate details of SES

Name of RCC	Position	Date of operation	SES details		
			Inmarsat I.D.	Type of SES ⁽¹⁾	Ocean Regions accessed ⁽²⁾

(1) Inmarsat-A, Inmarsat-B, or Inmarsat-C
(2) AOR-E, AOR-W, IOR, or POR

International NAVTEX Service

- 1

Does your Administration operate an International NAVTEX Service ?
If not operational now, indicate date of operation in the following table.

YES

NO

Is it operational now ?

YES

NO

2

Indicate detail of NAVTEX stations

NAV/ MET Area	Name of NAVTEX station	Position	Range* (NM)	Transmitter identification character (B1)	Transmission times(UTC)	Language	Date of operation

* Refer to resolution A.704(17). See appendix

4209.5 kHz NAVTEX Service

- 1

Does your Administration operate an 4209.5 kHz NAVTEX Service ?
If not operational now, indicate date of operation in the following table.

YES

NO

Is it operational now ?

YES

NO

2

Indicate detail of 4209.5 kHz NAVTEX stations

NAV/ MET Area	Name of NAVTEX station	Position	Transmitter identification character (B1)	Transmission times(UTC)	Language	Date of operation

APPENDIX

IMO RESOLUTION A.704(17)¹, annex 4, paragraph 3

Criteria for use when providing a NAVTEX service

The ground-wave coverage may be determined for each coast station by reference to Recommendation ITU-R PN.368-7 and CCIR Report 322 for the performance of a single sideband(J3E) system under the following conditions:

- Frequency - 518 kHz
- Bandwidth - 500 Hz
- Propagation - ground wave
- Time of day & Season - (Administration should determine time periods in accordance with NAVTEX time transmission table (NAVTEX Manual, figure 3) and seasons appropriate to their geographic area based on prevailing noise level.)
- Transmitter power & Antenna efficiency
 - (The range of a NAVTEX transmitter depends on the transmitter power and local propagation conditions. The actual range achieved should be adjusted to the minimum required for adequate reception in the NAVTEX area served, taking into account the needs of ships approaching from other areas. Experience has indicated that the required range of 250 to 400 nautical miles can generally be attained by transmitter power in the range between 100 and 1,000 W during daylight with a 60 % reduction at night.)
- RF S/N in 500 Hz bandwidth - 3 dB(Bit error rate 1×10^{-2})
- Percentage of time - 90
- Fading margin - 3 dB

Full coverage of NAVTEX service area should be verified by field strength measurements.

¹ Amendments to this resolution are expected to be adopted by the nineteenth Assembly.

ANNEX 4

LIMITS OF NAVAREA XVI WITH NAVAREAS XII AND XV

STATEMENT BY THE DELEGATION OF PERU

- 1 Peru fully agrees that the dividing lines between NAVAREAs are exclusively technical in character, and have no bearing upon boundaries between States, nor do they represent maritime boundaries. This was made clear in the IMO resolutions establishing the World-wide Navigational Warning Service.
- 2 There are some inaccuracies in document COM 40/4/3 which should be pointed out, as follows:
 - .1 Peru, as the Co-ordinator for NAVAREA XVI, has never agreed that the parallel of 18°S should be the limit with NAVAREA XV. As the representative of IHO acknowledged at the fortieth session of the Sub-Committee on Radiocommunications, it is not known how this parallel came to be the dividing line between NAVAREAs XV and XVI.
 - .2 In 1988 Peru's Department of Hydrography and Navigation published and distributed its National Manual of Radio Services to Mariners, fixing as the dividing lines between NAVAREAs XVI and XII the parallel of 3°24'S, and between NAVAREAs XV and XVI the parallel of 18°21'S. These lines were fixed in the light of operational criteria, since all lighthouses and other navigational aids in Peru remained within NAVAREA XVI. As IHO admitted, this publication by Peru's Department of Hydrography was apparently ignored.
 - .3 Navigators have not been in the habit of using the 18°S parallel as a dividing line between NAVAREAs XV and XVI since 1979, as indicated by IHO in document COM 40/4/3, because ISM information in this area has always been promulgated by the Co-ordinator for NAVAREA XVI, not by the Co-ordinator for NAVAREA XV.
 - .4 As stated by the representative of WMO, this Organization uses the parallel 18°S in its publications, not for technical reasons, but because, for standardization purposes, it has adopted the delimitation set by IHO in the chartlet of the NAVAREAs.
 - .5 Few ships, if any, now use automated communications services in this area, since the beginning of the transitional period for the GMDSS on 1 February 1992.
 - .6 The delimitation between the NAVAREAs XII, XV and XVI, as presently shown in the GMDSS Master Plan, is not appropriate from either a technical or an operational point of view, since some of Peru's navigational aids would be located in NAVAREA XV for which the Co-ordinator is Chile, as shown in the document.
 - .7 As the IHO representative explained at the meeting held during the fortieth session, the dividing lines proposed by IHO in document COM 40/4/3 (annex 2) for NAVAREAs XV and XVI resulted, not from an agreement between the parties concerned, but from an involuntary error. The relevant corrective steps must therefore be taken as soon as possible to amend this error, which may affect the safety of navigation in this area if it is allowed to remain. The delegation of Peru requests the Sub-Committee to instruct the Secretariat to amend the chartlet in the appropriate manner in all IMO publications and documents, and to eliminate all reference to political boundaries.
- .3 Peru is convinced that the delegation of Chile will readily agree to this proposal.

Statement by the delegation of Chile

Having considered the available information with regard to the present dividing line between NAVAREAs XV and XVI, and the legend on the chartlets in question, indicating that the parallel 18°S is the "Chile/Peru frontier", the following changes are suggested for consideration by the Sub-Committee on Radiocommunications at its fortieth session:

- 1 Change the existing dividing line between NAVAREAs XV and XVI so that the definitive boundary becomes the parallel located at latitude 18° 21' S;
- 2 Delete all references in the chartlets to the "Chile/Peru frontier";
- 3 At the foot of the chartlet in annex 5, add the following note:

"The delimitation of these NAVAREAs is not related to and shall not prejudice the delimitation of any boundaries between States"; and
- 4 On all the imaginary dividing lines between NAVAREAs show, as appropriate, the limits of latitude as North and South and those of longitude as East and West.

ANNEX 5

DRAFT AMENDMENTS TO RESOLUTION A.706(17) - WORLD-WIDE
NAVIGATIONAL WARNING SERVICE

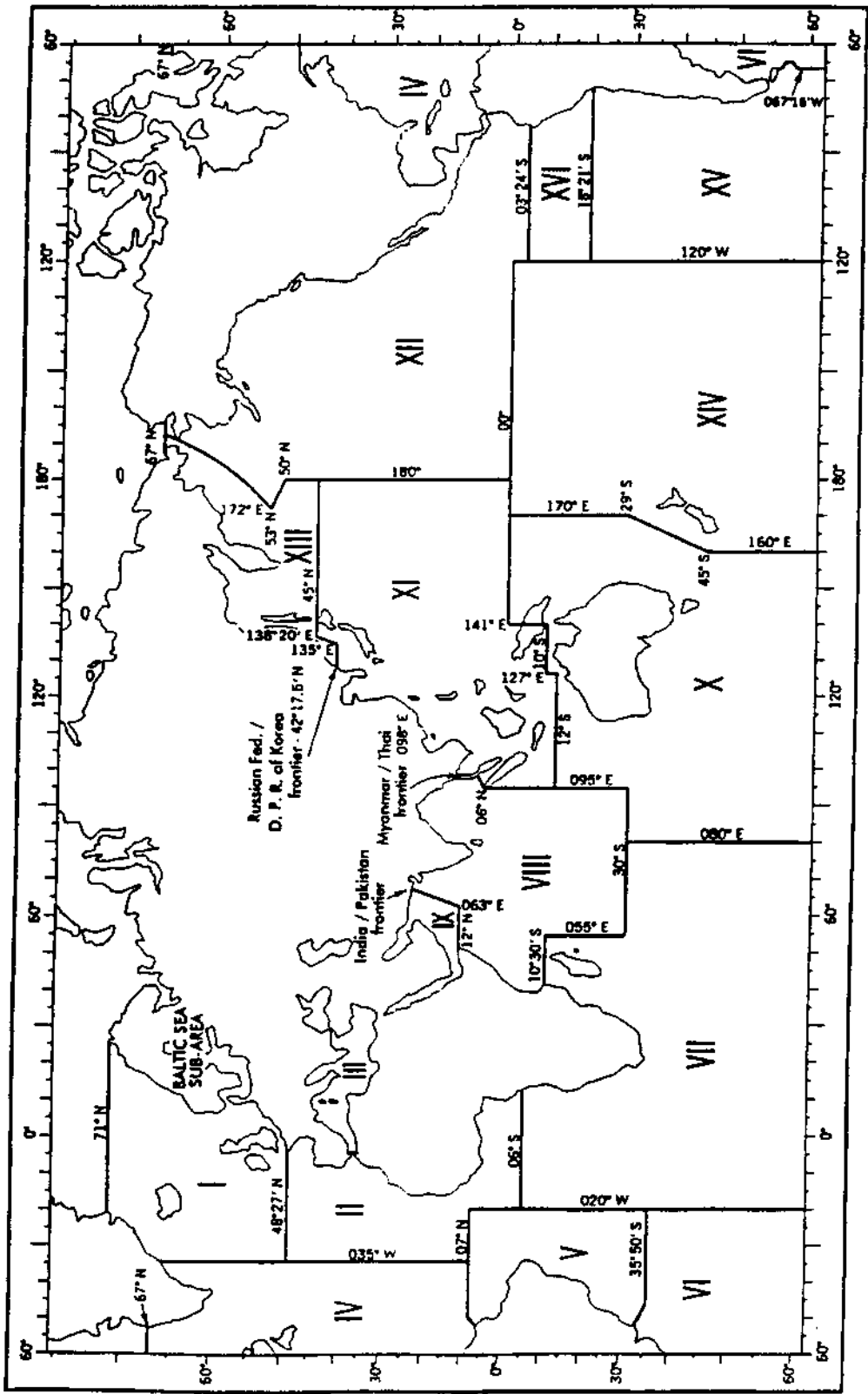
- Add the reference "(IMO Publication 908)" after the word "International SafetyNET Manual" in paragraphs 3.1.1.2, 3.2.1.2.1 and 5.2.1.1 in annex 1.
- Amend paragraph 4.2.1.3.12 in annex 1 as follows:
- ".12 significant malfunctioning of ~~radionavigation service~~
shore-based maritime safety information radio or satellite service";
- Add a new paragraph 4.2.1.3.14 in annex 1 as follows:

".14 acts or piracy and armed robbery against ships"
- Add a new paragraph 6.2.1.14 in annex 1 as follows:

".14 when notified by the authority designated to act on reports of piracy and armed robbery against ships, arrange for the broadcast of a suitable NAVAREA warning. Additionally, keep the national or regional piracy control centre informed of long-term broadcast action(s)"
- Add a new paragraph 6.6.1.12 in annex 1 as follows:

".12 when notified by the authority designated to act on reports of piracy and armed robbery against ships, arrange for the broadcast of a suitable NAVTEX/SafetyNET navigational warning. Additionally, keep the national or regional piracy control centre informed of long-term broadcast action(s)".
- Replace the appendix with the attached chartlet.

APPENDIX
GEOGRAPHICAL AREAS FOR CO-ORDINATING AND PROMULGATING
RADIO-NAVIGATIONAL WARNINGS



THE DELIMITATION OF THESE NAVAREAS IS NOT RELATED AND SHALL NOT
PREJUDICE THE DELIMITATIONS OF ANY BOUNDARIES BETWEEN STATES.

ANNEX 6

DRAFT REVISED ASSEMBLY RESOLUTION

PERFORMANCE STANDARDS FOR SURVIVAL CRAFT
TWO-WAY VHF RADIOTELEPHONE APPARATUS

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO regulation III/6.2.1 of the 1988 amendments to the 1974 SOLAS Convention concerning radiocommunications for the Global Maritime Distress and Safety System (GMDSS), which requires that ships be provided with survival craft two-way VHF radiotelephone apparatus and that such apparatus shall conform to appropriate performance standards not inferior to those adopted by the Organization,

RECOGNIZING the need to prepare performance standards for survival craft two-way VHF radiotelephone apparatus to be used in the GMDSS in order to ensure the operational reliability of such equipment and to avoid, as far as practicable, adverse interaction between such equipment and other communication and navigation equipment on board ship.

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its [sixty-fifth] session,

1. ADOPTS the Recommendation on Performance standards for survival craft portable two-way VHF radiotelephone apparatus and the Recommendation on Performance standards for two-way VHF radiotelephone apparatus for fixed installation in survival craft, the text of which is set out in Annexes 1 and 2, respectively, to the present resolution;
2. RECOMMENDS Member Governments to ensure that survival craft two-way radiotelephone apparatus for use in search and rescue operations which form part of the GMDSS, installed:
 - .1 on or after [.. November 1996], conform to performance standards not inferior to those specified in Annexes 1 and 2 to the present resolution; and
 - .2 before [.. November 1996], conform to performance standards not inferior to those specified in Annexes 1 and 2 to resolution A.762(18).
3. REVOKES resolution A.762(18).

ANNEX 1

RECOMMENDATION ON PERFORMANCE STANDARDS FOR SURVIVAL CRAFT PORTABLE TWO-WAY VHF RADIOTELEPHONE APPARATUS

1 Introduction

The survival craft portable two-way VHF radiotelephone, in addition to meeting the requirements of the Radio Regulations, the relevant ITU-R Recommendations and the general requirements set out in resolution A.694(17), should comply with the following performance standards.

2 General

2.1 The equipment should be portable and capable of being used for on-scene communication between survival craft, between survival craft and ship and between survival craft and rescue unit. It may also be used for on-board communications when capable of operating on appropriate frequencies.

2.2 The equipment should comprise at least:

- .1 an integral transmitter/receiver including antenna and battery;
- .2 an integral control unit including a press-to-transmit switch; and
- .3 an internal microphone and loudspeaker.

2.3 The equipment should:

- .1 be capable of being operated by unskilled personnel;
- .2 be capable of being operated by personnel wearing gloves as specified for immersion suits in regulation 33 of chapter III of SOLAS 74 Convention;
- .3 be capable of single-handed operation except for channel selection;
- .4 withstand drops on to a hard surface from a height of 1 m;
- .5 be watertight to a depth of 1 m for at least 5 min;
- .6 maintain watertightness when subjected to a thermal shock of 45°C under conditions of immersion;
- .7 not be unduly affected by seawater or oil or both;
- .8 have no sharp projections which could damage survival craft;

- .9 be of small size and light weight;
- .10 be capable of operating in the ambient noise level likely to be encountered on board ships or in survival craft;
- .11 have provisions for its attachment to the clothing of the user;
- .12 be resistant to deterioration by prolonged exposure to sunlight; and
- .13 be either of a highly visible yellow/orange colour or marked with a surrounding yellow/orange marking strip.

3 Class of emission, frequency bands and channels

3.1 The two-way radiotelephone should be capable of operation on the frequency 156.800 MHz (VHF channel 16) and on at least one additional channel.

3.2 All channels fitted should be for single-frequency voice communication only.

3.3 The class of emission should comply with Appendix 19 of the Radio Regulations.

4 Controls and indicators

4.1 An on/off switch should be provided with a positive visual indication that the radiotelephone is switched on.

4.2 The receiver should be provided with a manual volume control by which the audio output may be varied.

4.3 A squelch (mute) control and a channel selection switch should be provided.

4.4 Channel selection should be easily performed and the channels should be clearly discernible.

4.5 Channel indication should be in accordance with Appendix 18 of the Radio Regulations.

4.6 It should be possible to determine that channel 16 has been selected in all ambient light conditions.

5 Permissible warming-up period

The equipment should be operational within 5 s of switching on.

6 Safety precautions

The equipment should not be damaged by the effects of open-circuiting or short-circuiting the antenna.

7 Transmitter power

The effective radiated power should be a minimum of 0.25 W. Where the effective radiated power exceeds 1 W, a power reduction switch to reduce the power to 1 W or less is required. When this equipment provides for on-board communications, the output power should not exceed 1 W on these frequencies.

8 Receiver parameters

8.1 The sensitivity of the receiver should be equal to or better than $2\mu\text{V}$ e.m.f. for a SINAD ratio of 12 dB at the output.

8.2 The immunity to interference of the receiver should be such that the wanted signal is not seriously affected by unwanted signals.

9 Antenna

The antenna should be vertically polarized and, as far as practicable, be omnidirectional in the horizontal plane. The antenna should be suitable for efficient radiation and reception of signals at the operating frequency.

10 Receiver output

10.1 The audio output should be sufficient to be heard in the ambient noise level likely to be encountered on board ships or in a survival craft.

10.2 In the transmit condition, the output of the receiver should be muted.

11 Environmental conditions

The equipment should be so designed as to operate over the temperature range -20°C to $+55^{\circ}\text{C}$. It should not be damaged in stowage throughout the temperature range -30°C to $+70^{\circ}\text{C}$.

12 Power supply

12.1 The source of energy should be integrated in the equipment and may be replaceable by the user. In addition, provision may be made to operate the equipment using an external source of electrical energy.

12.2 Equipment intended for the source of energy to be user replaceable should be provided with a dedicated primary battery for use in the event of a distress situation. This battery should be equipped with a non-replaceable seal to indicate that it has not been used.

12.3 Equipment intended for the source of energy to be non-user replaceable should be provided with a primary battery. The portable two-way radiotelephone equipment should be fitted with a non-replaceable seal to indicate that it has not been used.

12.4 The primary battery should have sufficient capacity to ensure 8 h operation at its highest rated power with a duty cycle of 1:9. This duty cycle is defined as 6 s transmission, 6 s reception above squelch opening level and 48 s reception below squelch opening level.

12.5 Primary batteries should have a shelf life of at least 2 years and if identified to be user-replaceable should be of a colour or marking as defined in 2.3.13.

12.6 Batteries not intended for the use in the event of a distress situation should be of a colour or marking so that they cannot be confused with batteries intended for such use.

13 Labelling

In addition to the items specified in resolution A.694(17) on general requirements, the following should be clearly indicated on the exterior of the equipment:

- .1 brief operating instructions; and
- .2 expiry date for the primary batteries.

ANNEX 2

RECOMMENDATION ON PERFORMANCE STANDARDS FOR TWO-WAY VHF RADIOTELEPHONE APPARATUS FOR FIXED INSTALLATION IN SURVIVAL CRAFT

1 Introduction

The survival craft two-way VHF radiotelephone for fixed installations, in addition to meeting the requirements of the Radio Regulations, the relevant ITU-R Recommendations and the general requirements set out in resolution A.694(17), should comply with the following performance standards.

2 General

2.1 The equipment should be capable of being used for on-scene communication between survival craft, between survival craft and ship and between survival craft and rescue unit.

2.2 The equipment should comprise at least:

- .1 a transmitter and receiver;
- .2 an antenna which may be fixed to the equipment or mounted separately; and
- .3 a microphone with a press-to-talk switch and a loudspeaker.

2.3 The equipment should:

- .1 be capable of being operated by unskilled personnel;
- .2 be capable of being operated by personnel wearing gloves as specified for immersion suits in regulation 33 of chapter III of SOLAS 74 Convention;
- .3 withstand such shocks and vibration as might occur in survival craft;
- .4 be watertight to a depth of 1 m for at least 5 min;
- .5 maintain watertightness when subjected to a thermal shock of 45°C under conditions of immersion;
- .6 not be unduly affected by seawater or oil or both;
- .7 have no sharp projections which could injure personnel;
- .8 be capable of operating in the ambient noise level likely to be encountered in survival craft; and
- .9 be so designed that it can be readily mounted in a survival craft.

3 Class of emission, frequency bands and channels

3.1 The two-way radiotelephone should be capable of operation on the frequency 156.800 MHz (VHF channel 16) and on at least one additional channel.

3.2 All channels fitted should be for single-frequency voice communication only.

3.3 The class of emission should comply with appendix 19 of the Radio Regulations.

4 Controls and indicators

4.1 An on/off switch should be provided with a positive visual indication that the radiotelephone is switched on.

4.2 The receiver should be provided with a manual volume control by which the audio output of the loudspeaker may be varied. Where a handset is provided, this manual volume control of the loudspeaker should not influence the audio output of the handset.

4.3 A squelch (mute) control and a channel selection switch should be provided.

4.4 Channel selection should be easily performed and the channels should be clearly discernible.

4.5 Channel indication should be in accordance with appendix 18 of the Radio Regulations.

4.6 It should be possible to determine that channel 16 has been selected in all ambient light conditions.

5 Permissible warming-up period

The equipment should be operational within 5 s of switching on.

6 Safety precautions

The equipment should not be damaged by the effects of open-circuiting or short-circuiting the antenna.

7 Transmitter power

The R.F. output power should be a minimum of 0.25 W. Where the R.F. output power exceeds 1 W a power reduction switch to reduce the output power to 1 W or less is required.

8 Receiver parameters

8.1 The sensitivity of the receiver should be equal to or better than 2 μ V e.m.f. for a SINAD ratio of 12 dB at the output.

8.2 The immunity to interference of the receiver should be such that the wanted signal is not seriously affected by unwanted signals.

9 Antenna

The antenna should be vertically polarized and, as far as practicable, be omnidirectional in the horizontal plane. The antenna should be suitable for efficient radiation and reception of signals at the operating frequency.

10 Receiver output

10.1 The audio output should be sufficient to be heard in the ambient noise level likely to be encountered in survival craft.

10.2 In the transmit condition, the output of the receiver should be muted.

11 Environmental conditions

The equipment should be so designed as to operate over the temperature range -20°C to $+55^{\circ}\text{C}$. It should not be damaged in stowage throughout the temperature range -30°C to $+70^{\circ}\text{C}$.

12 Power supply

12.1 The source of energy may be integrated in the equipment or external to it.

12.2 The source of energy should have sufficient capacity to ensure 8 h operation at its highest rated power with a duty cycle of 1:9. This duty cycle is defined as 6 s transmission, 6 s reception above squelch opening level and 48 s reception below squelch opening level.

12.3 The two-way radiotelephone equipment may be equipped with a primary or secondary battery. Primary batteries shall have a shelf life of at least 2 years.

12.4 Where secondary batteries are used, suitable arrangements should be made to ensure the availability of fully charged cells at all times.

13 Labelling

In addition to the items specified in resolution A.694(17) on general requirements, the following should be clearly indicated on the exterior of the equipment:

- .1 brief operating instructions; and
- .2 expiry date for the primary batteries, if any.

ANNEX 7

DRAFT ASSEMBLY RESOLUTION

**PERFORMANCE STANDARDS FOR A SHIPBORNE INTEGRATED RADIO
COMMUNICATION SYSTEM (IRCS) WHEN USED IN THE GMDSS**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING FURTHER regulations IV/6 and IV/14 of the 1988 amendments to the International Convention for the Safety of Life at Sea (SOLAS), 1974 concerning radiocommunications for the global maritime distress and safety system (GMDSS) which require respectively that every ship shall be provided with radio installations and that all the equipment in these installations shall conform to appropriate performance standards not inferior to those adopted by the Organization,

RECOGNIZING the need to take into account the human element in identifying measures to increase effectiveness and efficiency of the human performance by design of equipment so that the equipment is more suited to the operators who use it,

RECOGNIZING ALSO that increased effectiveness and efficiency of using GMDSS equipment would be achieved by integrating the radiocommunication equipment into a shipborne integrated radio communication system thereby providing simpler procedures for operators,

FURTHER RECOGNIZING the need to prepare a performance standards for such a shipborne integrated radiocommunication system to ensure that the functional requirements of SOLAS regulation IV/4 are met,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its [sixty-fifth] session,

1. ADOPTS the Recommendation on Performance Standards for a Shipborne Integrated Radio Communication System (IRCS) when used in the GMDSS, the text of which is set out in the Annex to this resolution;
2. RECOMMENDS Governments ensure that a Shipborne Integrated Radio Communication System (IRCS) when used in the GMDSS conform to performance standards not inferior to those specified in the Annex to this resolution.

ANNEX

RECOMMENDATION ON PERFORMANCE STANDARDS FOR A SHIPBORNE INTEGRATED RADIOCOMMUNICATION SYSTEM (IRCS) WHEN USED IN THE GMDSS

1 Introduction

1.1 The IRCS is a system where individual radiocommunication equipment and installations are used as sensors, i.e. without the need of their own control units, providing outputs to and accepting inputs from operator's positions called workstations.

1.2 These workstations are called GMDSS workstations if they include control and monitoring of all equipment and installations provided on a ship for the GMDSS which are also suitable for general radiocommunications.

1.3 The IRCS, in addition to meeting the general requirements set out in resolution A.694(17), should comply with the following performance standards.

2 General

2.1 The IRCS should comply with the applicable functional requirements of the GMDSS. All functional requirements for each individual radiocommunication equipment and installation integrated in the IRCS should be available. No functional requirements for a specific radiocommunication equipment or installation should impair the availability of any other functional requirement for any other radiocommunication equipment or installation integrated in the IRCS.

2.2 All functional requirements of the equipment integrated in the IRCS should conform to the appropriate provisions of the performance standards for that equipment.

2.3 No single fault should impair the operation of more than one radiocommunication sensor or more than one workstation at any time.

2.4 The IRCS should:

- .1 comprise at least two GMDSS workstations each connected to each GMDSS radiocommunication sensor over a network or connecting system;
- .2 comprise at least two printers;
- .3 have facilities for automatically updating ship's position and time data in addition to the provision for manual input of this data;
- .4 have a power supply arrangement which ensures that it is not possible to inadvertently switch off any part of the IRCS;
- .5 include detecting facilities such that failure of any part of the IRCS activates an alarm; and

- .6 be protected against the effects of computer viruses.

2.5 The GMDSS workstations should:

- .1 have an identical user interface and an identical access to each function for different sensors;
- .2 be capable of being operated independently of each other;
- .3 be capable of allowing simultaneous operation of at least two GMDSS radiocommunication sensors; and
- .4 be capable of transmitting distress alerts. The distress alert should only be initiated by means of a dedicated button for each GMDSS sensor; the button should not be used for any other purpose. Each button should be clearly identified, protected against inadvertent operation, require two independent actions to initiate the distress alert and produce an indication that the distress alert has been activated. Each distress alerting button should be electrically separate from the IRCS network or connecting system. It should be possible to interrupt and initiate the distress alert at any time.

2.6 Integration of the VHF radiotelephone required for navigational safety should only be permitted if it does not prevent compliance with SOLAS regulation IV/6.3.

2.7 Additional work stations intended only for general radiocommunications should not have access to the distress alerting functions; neither should they impair or slow down the distress alerting and alarm functions. The GMDSS workstations should have priority access over additional workstations.

2.8 Additional sensors not required for the GMDSS should neither impair nor slow down the distress alerting and alarm functions.

ANNEX 8**DRAFT REVISED ASSEMBLY RESOLUTION A.....****PERFORMANCE STANDARDS FOR SHIPBORNE VHF RADIO INSTALLATIONS
CAPABLE OF VOICE COMMUNICATION AND
DIGITAL SELECTIVE CALLING**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO regulations IV/7.1.1 and IV/14.1 of the 1988 amendments to the 1974 SOLAS Convention concerning radiocommunications for the Global Maritime Distress and Safety System (GMDSS), which require respectively that ships be provided with a VHF radio installation capable of voice communication and digital selective calling and that such VHF radio installations shall conform to appropriate performance standards not inferior to those adopted by the Organization,

RECOGNIZING the need to prepare performance standards for VHF radio installations capable of voice communications and digital selective calling to be used in the GMDSS in order to ensure the operational reliability of such equipment and to avoid, as far as practicable, adverse interaction between such equipment and other communication and navigation equipment on board ship,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its [sixty-fifth] session,

1. ADOPTS the Recommendation on Performance Standards for Shipborne VHF Radio Installations Capable of Voice Communication and Digital Selective Calling, the text of which is set out in the Annex to the present resolution;

2. RECOMMENDS Governments to ensure that shipborne VHF radio installations capable of voice communication and digital selective calling which will form part of the GMDSS installed:

- .1 on or after [... November 1996], conform to performance standards not inferior to those specified in the Annex to the present resolution; and
- .2 before [... November 1996], conform to performance standards not inferior to those specified in the Annex to resolution A.609(15).

3. REVOKES resolution A.609(15).

ANNEX

RECOMMENDATION ON PERFORMANCE STANDARDS FOR SHIPBORNE VHF RADIO INSTALLATIONS CAPABLE OF VOICE COMMUNICATION AND DIGITAL SELECTIVE CALLING

1 INTRODUCTION

The VHF radio installation, in addition to meeting the requirements of the Radio Regulations, the relevant ITU-R Recommendations and the general requirements set out in resolution A.694(17), should comply with the following performance standards.

2 GENERAL

2.1 The installation, which may consist of more than one piece of equipment, should be capable of operating on single-frequency channels or on single- and two-frequency channels.

2.2 The equipment should provide for the following categories of calls using both voice and digital selective calling (DSC):

- .1 distress, urgency and safety;
- .2 ship operational requirements; and
- .3 public correspondence.

2.3 The equipment should provide for the following categories of communications using voice:

- .1 distress, urgency and safety;
- .2 ship operational requirements; and
- .3 public correspondence.

2.4 The equipment should comprise at least:

- .1 a transmitter/receiver including antenna;
- .2 an integral control unit or one or more separate control units;
- .3 a microphone with a press-to-transmit switch, which may be combined with a telephone in a handset;
- .4 an internal or external loudspeaker;

- .5 an integral or separate digital selective calling facility; and
- .6 a dedicated DSC watchkeeping facility to maintain a continuous watch on channel 70.

2.5 The installation may also include additional receivers.

2.6 A distress alert should be activated only by means of a dedicated distress button. This button should not be any key of an ITU-T digital input panel or an ISO keyboard provided on the equipment.

2.7 The dedicated distress button should:

- .1 be clearly identified; and
- .2 be protected against inadvertent operation.

2.8 The distress alert initiation should require at least two independent actions.

2.9 The equipment should indicate the status of the distress alert transmission.

2.10 It should be possible to interrupt and initiate distress alerts at any time.

3 CLASS OF EMISSION, FREQUENCY BANDS AND CHANNELS

3.1 The equipment may be designated for operation on one or more channels selected from and in accordance with Appendix 18 of the Radio Regulations.

3.2 The radiotelephone facility shall be capable of operating as follows:

- .1 in the band 156.3 MHz to 156.875 MHz on single-frequency channels as specified in Appendix 18 to the Radio Regulations; and
- .2 in the band 156.025 MHz to 157.425 MHz for transmitting and the band 160.625 MHz to 162.025 MHz for receiving on two-frequency channels as specified in Appendix 18 to the Radio Regulations.

3.3 The digital selective calling facility should be capable of operating on channel 70.

3.4 Class of emission should comply with Appendix 19 of the Radio Regulations.

4 CONTROLS AND INDICATORS

4.1 GENERAL

4.1.1 Change of channel should be capable of being made as rapidly as possible, but in any event within 5 s.

4.1.2 The time taken to switch from the transmit to the receive condition, and vice versa, should not exceed 0.3 s.

4.1.3 An on/off switch should be provided for the entire installation with a visual indication that the installation is switched on.

4.1.4 A visual indication that the carrier is being transmitted should be provided.

4.1.5 The equipment should indicate the channel number, as given in the Radio Regulations, to which it is tuned. It should allow the determination of the channel number under all conditions of external lighting. Where practicable, channels 16 and 70 should be distinctively marked.

4.1.6 Control of the equipment should be possible at the position from which the ship is normally navigated. Control from that position should have priority if additional control units are provided. When there is more than one control unit, indication should be given to the other units that the equipment is in operation.

4.1.7 The equipment should not be able to transmit during channel switching operation.

4.1.8 Operation of the transmit/receive control should not cause unwanted emissions.

4.2 RADIOTELEPHONE FACILITY

4.2.1 Provision should be made for changing from transmission to reception by use of a press-to-transmit switch. Additionally, facilities for operation on two-frequency channels without manual control may be provided.

4.2.2 The receiver should be provided with a manual volume control by which the audio output may be varied.

4.2.3 A squelch control should be provided on the exterior of the equipment.

5 PERMISSIBLE WARMING-UP PERIOD

The equipment should be operational within 1 min of switching on.

6 SAFETY PRECAUTIONS

The equipment, when operating, should not be damaged by the effects of open-circuited or short-circuited antenna terminals.

7 TRANSMITTER OUTPUT POWER

7.1 The transmitter output power should be between 6 and 25 W.

7.2 Provision should be made for reducing the transmitter output power to a value of between 0.1 and 1 W. However, this reduction of the power is optional on channel 70.

8 RECEIVER PARAMETERS

8.1 RADIOTELEPHONE FACILITY

The sensitivity of the receiver should be equal to or better than $2\mu\text{V}$ e.m.f. for a signal-to-noise ratio of 20 dB.

8.2 DIGITAL SELECTIVE CALLING FACILITY

With a DSC modulated input signal having a level of $1\mu\text{V}$ e.m.f. to its associated VHF receiver, the DSC equipment should be capable of decoding the received message with a maximum permissible output character error rate of 10^{-2} .

8.3 IMMUNITY TO INTERFERENCE

The immunity to interference of the receiver should be such that the wanted signal is not seriously affected by unwanted signals.

9 ANTENNA SYSTEM

The VHF antenna or antennae should be vertically polarized and, as far as practicable, be omnidirectional in the horizontal plane. The installation should be suitable for efficient radiation and reception of signals at the operating frequencies.

10 LOUDSPEAKER AND TELEPHONE HANDSET (radiotelephone facility)

10.1 The receiver output should be suitable for use with a loudspeaker or a telephone handset. The audio output should be sufficient to be heard in the ambient noise level likely to be encountered on board ships.

10.2 It should be possible to switch off the loudspeaker without affecting the audio output of the telephone handset, if provided.

10.3 In the transmit condition during simplex operation, the output of the receiver should be muted.

10.4 In the transmit condition during duplex operation, only the telephone handset should be in circuit. Care should be taken to prevent any electrical or acoustic feedback, which could cause singing.

11 DIGITAL SELECTIVE CALLING FACILITY

11.1 The facility should conform to the provisions of the relevant ITU-R Recommendations pertaining to the DSC system.¹

11.2 The DSC facility should comprise:

- .1 means to decode and encode DSC messages;
- .2 means necessary for composing the DSC message;
- .3 means to verify the prepared message before it is transmitted;
- .4 means to display the information contained in a received call in plain language;
- .5 means for the manual entry of the position information; additionally, automatic entry may be provided; and
- .6 means for the manual entry of the time at which the position was determined; additionally, automatic entry may be provided.

11.3 Distress message storage

11.3.1 If the received messages are not printed immediately, sufficient capacity should be provided to enable at least 20 received distress messages to be stored in the DSC facility.

11.3.2 These messages should be stored until readout.

11.4 It should be possible to initiate and make distress and safety calls from the position from which the ship is normally navigated. The means for initiating a distress call should be easy to operate and protected against inadvertent activation.

11.5 Initiation of DSC distress calls should supersede any other operation of the facility.

11.6 Self-identification data should be stored in the DSC unit. It should not be possible for the user easily to change these data.

11.7 Means should be provided to enable routine testing of the DSC facilities without radiation of signals.

11.8 Provision should be made for:

- .1 a specific aural alarm and visual indication to indicate receipt of a distress or urgency call or a call having distress category. It should not be possible to disable this alarm and indication. Provision should be made to ensure that they can be reset only manually; and
- .2 aural alarms and visual indication for calls other than distress and urgency.

12 POWER SUPPLY

The VHF radio installation should be powered from the ship's main source of electrical energy. In addition, it should be possible to operate the VHF installation from an alternative source of electrical energy.

1. Class A or B DSC equipment conforming to Recommendation ITU-R M.493 should be used to meet this requirement.

ANNEX 9

DRAFT REVISED ASSEMBLY RESOLUTION

**PERFORMANCE STANDARDS FOR SHIPBORNE MF RADIO INSTALLATIONS
CAPABLE OF VOICE COMMUNICATION AND
DIGITAL SELECTIVE CALLING**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO regulations IV/8.1.3, IV/9.1.1, IV/10.1.2 and IV/14.1 of the 1988 amendments to the 1974 SOLAS Convention concerning radiocommunications for the Global Maritime Distress and Safety System (GMDSS), which require respectively that ships be provided with a MF radio installation capable of voice communications and digital selective calling and that such MF radio installations shall conform to appropriate performance standards not inferior to those adopted by the Organization,

RECOGNIZING the need to prepare performance standards for shipborne MF radio installations capable of voice communications and digital selective calling to be used in the GMDSS in order to ensure the operational reliability of such equipment and to avoid, as far as practicable, adverse interaction between such equipment and other communication and navigation equipment on board ship,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its [sixty-fifth] session,

1. ADOPTS the Recommendation on Performance Standards for Shipborne MF Radio Installations Capable of Voice Communication and Digital Selective Calling, the text of which is set out in the Annex to this resolution;
2. RECOMMENDS Governments to ensure that shipborne MF radio installations capable of voice communication and digital selective calling, which will form part of the GMDSS, installed:
 - .1 on or after [.. November 1996], conform to performance standards not inferior to those specified in the Annex to this resolution; and
 - .2 before [.. November 1996], conform to performance standards not inferior to those specified in the Annex to resolution A.610(15).
3. REVOKES resolution A.610(15).

ANNEX

RECOMMENDATION ON PERFORMANCE STANDARDS FOR SHIPBORNE MF RADIO INSTALLATIONS CAPABLE OF VOICE COMMUNICATION AND DIGITAL SELECTIVE CALLING

PART A - GENERAL

1 INTRODUCTION

The MF radiotelephone and digital selective calling installation, in addition to meeting the requirements of the Radio Regulations, and relevant ITU-R Recommendations and the general requirements set out in Assembly resolution A.694(17) should comply with the following performance standards.

2 GENERAL

2.1 The installation which may consist of more than one piece of equipment, should be capable of operating on single-frequency channels or on single- and two-frequency channels.

2.2 The equipment should provide for the following categories of calling using both voice and digital selective calling (DSC):

- .1 distress, urgency and safety;
- .2 ship operational requirements; and
- .3 public correspondence.

2.3 The equipment should provide for the following categories of communications using voice and, optionally, narrow-band direct printing (NBDP):

- .1 distress, urgency and safety;
- .2 ship operational requirements; and
- .3 public correspondence.

2.4 The equipment should comprise at least:

- .1 a transmitter/receiver, including antenna;
- .2 an integral control unit or one or more separate control units;

- .3 a microphone with a press-to-transmit switch which may be combined with a telephone in a handset;
 - .4 an internal or external loudspeaker;
 - .5 an integral or separate digital selective calling facility; and
 - .6 a dedicated DSC watchkeeping facility to maintain a continuous watch on the distress channel.
- 2.5 A distress alert should be activated only by means of a dedicated distress button. This button should not be any key of an ITU-T digital input panel or an ISO keyboard provided on the equipment.
- 2.6 The dedicated distress button should:
- .1 be clearly identified; and
 - .2 be protected against inadvertent operation.
- 2.7 The distress alert initiation should require at least two independent actions.
- 2.8 The equipment should indicate the status of the distress alert transmission.
- 2.9 It should be possible to interrupt and initiate distress alerts at any time.
- 2.10 **POWER SUPPLY**

The MF radio installation should be powered from the ship's main source of electrical energy. In addition, it should be possible to operate the MF installation from an alternative source of electrical energy.

2.11 **CONTROL**

It should be possible to conduct distress and safety communications from the position, or in the vicinity of the position, from which the vessel is normally navigated.

PART B - TRANSMITTERS

1 FREQUENCIES AND CLASSES OF EMISSION

1.1 The radiotelephone and DSC transmitter should be capable of transmitting on a number of frequencies in the bands between 1,605 kHz and 4,000 kHz considered by the Administration as adequate for the operation of the ship, but at least on the frequencies 2,182 kHz and 2,187.5 kHz.

1.2 Radiotelephone frequencies are designated in terms of the carrier frequency; DSC frequencies are designated in terms of the assigned (centre) frequency. When DSC signals are transmitted using a transmitter

in J2B mode the (suppressed) carrier frequency should be adjusted so as to have the DSC signal transmitted on the assigned DSC frequency. The selected transmitter frequency should be clearly identifiable on the control panel of the equipment.

- 1.3 .1 The transmitter should be capable of transmitting (upper side band signals, where appropriate) using classes of emission J3E, H3E and either J2B or F1B.
 - .2 When switching to the preset distress frequency 2,182 kHz the appropriate class of emission in accordance with the Radio Regulations should be selected automatically.¹
 - .3 When switching to the preset distress frequency 2,187.5 kHz the class of emission J2B or F1B should be selected automatically.¹
- 1.4 It should be possible to change the transmitter from any class of emission to another for which it is designed to operate by means of not more than one control.
- 1.5 It should be possible for the user to select transmission frequencies independent of any receiver setting. This does not preclude the use of transceivers.
- 1.6 It should be possible to change the transmitter quickly from operation on any frequency to operation on any other frequency, and in any event within a period not exceeding 15 s. The equipment should not be able to transmit during channel switching operations.
- 1.7 Means should be provided to prevent overmodulation automatically.

2 FREQUENCY STABILITY AND ACCURACY

The transmitter frequency should remain within 10 Hz of the required frequency at all times following the warming-up period.

3 OUTPUT POWER ²

- 3.1 During normal modulation, the peak envelope power in the case of J3E or H3E emissions, or the mean power in the case of J2B or F1B emissions, should be at least 60 W at any frequency within the specified frequency range.
- 3.2 If the rated output power exceeds 400 W, provision should be made for reducing the output to 400 W or less.

4 PERMISSIBLE WARMING-UP PERIOD

The equipment should be capable of operating on 2,182 kHz and 2,187.5 kHz within 1 min after switching on.

5 CONTINUOUS OPERATION

Continuous operation should be possible when the transmitter is adjusted to its rated power.

6 CONTROLS AND INDICATORS

6.1 Provision should be made for indicating the antenna current or power delivered to the antenna. Failure of the indicating system should not interrupt the antenna circuit.

6.2 Manually tuned equipment should be fitted with a sufficient number of indicators to permit accurate and rapid tuning.

6.3 Operation of the transmit/receive control should not cause unwanted emissions.

6.4 All adjustments and controls necessary for switching the transmitter to operate on 2,182 kHz and 2,187.5 kHz should be clearly marked in order that these operations may be performed readily.

7 SAFETY PRECAUTIONS

The equipment should be so designed and constructed that when the transmitter is providing power to the antenna the transmitter is protected against damage resulting from disconnection of the antenna or short-circuiting of antenna terminals. If this protection is provided by means of a safety device, that device should automatically be reset following removal of the antenna open-circuit or short-circuit conditions.

8 POWER SUPPLY

8.1 If it is necessary to delay the application of voltage, for example anode voltage, to any part of the transmitter after switching on, this delay should be provided automatically.

8.2 If the transmitter includes parts which are required to be heated in order to operate correctly, for example crystal ovens, the power supplies to the heating circuits should be so arranged that they can remain operative when other supplies to or within the equipment are switched off. If a special switch for the heating circuits is provided, its function should be clearly indicated; it shall normally be in the "on" position and be protected against inadvertent operation. The correct operating temperature should be reached within a period of 30 min after the application of power.

PART C - RECEIVERS

1 FREQUENCIES AND CLASSES OF EMISSION

1.1 The receiver should be capable of being tuned throughout the bands between 1,605 kHz and 4,000 kHz. Tuning should be either continuous, or by incremental steps, or by the selection of a number of spot frequencies considered by the Administration as adequate for the operation of the ship, or by any combination of these methods. The frequencies 2,182 kHz and 2,187.5 kHz should always be included.

1.2 Radiotelephone frequencies should be designated in terms of the carrier frequency; DSC frequencies should be designated in terms of assigned (centre) frequency. The selected receiver frequency should be clearly identifiable on the control panel of the equipment.

1.3 The receiver should be capable of receiving upper side band signals as appropriate for classes of emission J3E, H3E, J2B and F1B.

1.4 The class of emission should be selectable by not more than one control.

1.5 It should be possible for the user to select reception frequencies independent of any transmitter setting. This does not preclude the use of transceivers.

1.6 The receiver should be capable of being tuned to different frequencies quickly, and in any event within a period not exceeding 15 s.

2 FREQUENCY STABILITY AND ACCURACY

The receiver frequency should at all times remain within 10 Hz of the required frequency following the warming-up period.

3 USABLE SENSITIVITY

For classes of emission J3E and F1B the sensitivity of the receiver should be equal to or better than 6 μ V e.m.f. at the receiver input for a signal-to-noise ratio of 20 dB. For DSC an output character error rate of 10^{-2} or less should be obtained for a signal-to-noise ratio of 12 dB.

4 RECEIVER OUTPUT

4.1 For the reception of voice signals, the receiver should be suitable for use with a loudspeaker and a telephone handset and should be capable of providing power of at least 2 W to the loudspeaker and at least 1 mW to the handset.

4.2 An output should be provided for DSC signals if the corresponding facility is not integrated.

5 PERMISSIBLE WARMING-UP PERIOD

The equipment should be capable of operating on 2,182 kHz and 2,187.5 kHz within 1 min after switching on.

6 IMMUNITY TO INTERFERENCE

The immunity to interference of the receiver should be such that the wanted signal is not seriously affected by unwanted signals.

7 CONTROLS

7.1 All adjustment and controls necessary for switching the receiver to operate on 2,187.5 kHz should be clearly marked in order that these operations may be performed readily. The arrangements for switching the receiver to operate on 2,182 kHz should also be clearly marked.

7.2 The receiver should be provided with automatic gain control.

8 POWER SUPPLY

If the receiver includes parts which are required to be heated in order to operate correctly, for example crystal ovens, the power supplies to the heating circuits should be so arranged that they can remain operative when other supplies to or within the equipment are switched off. If a special switch for the heating circuits is provided, its function should be clearly indicated; it shall normally be in the "on" position and be protected against inadvertent operation. The correct operating temperature should be reached within a period of 30 min after the application of power.

PART D - DIGITAL SELECTIVE CALLING FACILITY

1 The facility should conform to the provisions of the relevant ITU-R Recommendations pertaining to the DSC system.³

2 The DSC facility should comprise:

- .1 means to decode and encode DSC messages;
- .2 means necessary for composing the DSC message;
- .3 means to verify the prepared message before it is transmitted;
- .4 means to display the information contained in a received call in plain language;
- .5 means for the manual entry of the position information; additionally automatic entry may be provided; and
- .6 means for the manual entry of the time at which the position was determined; additionally automatic entry may be provided.

3 DISTRESS MESSAGE STORAGE

3.1 If the received messages are not printed immediately, sufficient capacity should be provided to enable at least 20 received distress messages to be stored in the DSC facility.

3.2 These messages should be stored until readout.

4 It should be possible to initiate and make distress and safety calls from the position from which the ship is normally navigated. The means for initiating a distress call should be easy to operate and protected against inadvertent activation.

5 Initiation of DSC distress calls should supersede any other operation of the facility.

6 Self-identification data should be stored in the DSC unit. It should not be possible for the user easily to change these data.

7 Means should be provided to enable routine testing of the DSC facilities without radiation of signals.

8 Provision should be made for a specific aural alarm and visual indication to indicate receipt of a distress or urgency call or a call having distress category. It should not be possible to disable this alarm and indication. Provision should be made to ensure that they can be reset only manually.

1. Existing transmitters during the transition and amortization period may be exempted from these requirements.
2. In determining the A2 area an antenna efficiency of 25% and an output power of 60 W are assumed.
3. Class A or B DSC equipment conforming to Recommendation ITU-R M.493 should be used to meet this requirement.

ANNEX 10

DRAFT REVISED ASSEMBLY RESOLUTION

PERFORMANCE STANDARDS FOR FLOAT-FREE VHF EMERGENCY
POSITION-INDICATING RADIO BEACONS

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO regulations IV/8.3 and IV/14.1, of the 1988 amendments to the 1974 SOLAS Convention concerning radiocommunications for the Global Maritime Distress and Safety System (GMDSS), which, respectively, permit ships engaged on voyages exclusively in sea areas A1 to be provided with a float-free VHF emergency position-indicating radio beacon (EPIRB) and that such EPIRBs shall conform to appropriate performance standards not inferior to those adopted by the Organization,

RECOGNIZING the need to prepare performance standards for float-free VHF EPIRBs to be used in the GMDSS in order to ensure the operational reliability of such equipment and to avoid, as far as practicable, adverse interaction between such equipment and other communication and navigation equipment on board ship,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its [sixty-fifth] session,

1. ADOPTS the Recommendation on Performance Standards for Float-Free VHF EPIRBs, the text of which is set out in the Annex to the present resolution;
2. RECOMMENDS Governments to ensure that VHF EPIRBs which will form part of the GMDSS, installed:
 - .1 on or after [.. November 1996], conform to performance standards not inferior to those specified in the Annex to the present resolution; and
 - .2 before [.. November 1996], conform to performance standards not inferior to those specified in the Annex to resolution A.612(15);
3. REVOKES resolution A.612(15).

ANNEX

RECOMMENDATION ON PERFORMANCE STANDARDS FOR FLOAT-FREE VHF EPIRBs

PART A - GENERAL

1 INTRODUCTION

The VHF emergency position-indicating radiobeacon (EPIRB), in addition to meeting the requirements of the Radio Regulations, the relevant ITU-R Recommendations and the general requirements set out in resolution A.694(17), should comply with the following performance standards.

2 GENERAL

2.1 The EPIRB should be capable of transmitting a VHF distress alert and of providing a locating signal by means of a 9 GHz radar transponder. These two functions may be provided in an integral unit. The radar transponder (SART) should comply with the Recommendation on Performance Standards for Survival Craft Radar Transponders for Use in Search and Rescue Operations (Assembly resolution A.697(17)) and should be capable of indicating the location of a unit in distress on the assisting units' radars by means of a series of equally spaced dots as specified in Assembly resolution A.530(13).

2.2 The EPIRB should be of an automatic float-free type. The equipment, mounting and releasing arrangements should be reliable even under extreme conditions.

2.3 The VHF EPIRB should:

- .1 be capable of being easily activated by unskilled personnel;
- .2 be fitted with adequate means to prevent inadvertent activation;
- .3 be so designed that the electrical portions are watertight at a depth of 10 m for at least 5 min. Consideration should be given to a temperature variation of 45°C during transitions from the mounted position to immersion. The harmful effects of a marine environment, condensation and water leakage should not affect the performance of the beacon;
- .4 be automatically activated after floating free;
- .5 be capable of manual activation and manual deactivation;
- .6 be provided with means to indicate that signals are being emitted;
- .7 be capable of floating upright in calm water and have positive stability and sufficient buoyancy (preferably more than 20 N) in all sea conditions;

- .8 be capable of being dropped into the water without damage from a height of 20 m;
 - .9 be capable of being tested on board, without radiating an alerting signal, to determine that it is capable of operating properly;
 - .10 be of highly visible yellow/orange colour and be fitted with retroreflecting material;
 - .11 be equipped with a buoyant captive lanyard, suitable for use as a tether, which should be so arranged as to prevent its being trapped in the ship's structure when floating free;
 - .12 be provided with a low duty cycle light (0.75 cd) activated by darkness to indicate its position for the survivors nearby and rescue units;
 - .13 not be unduly affected by seawater or oil; and
 - .14 be resistant to deterioration by prolonged exposure to sunlight.
- 2.4 The battery should have sufficient capacity to operate the VHF EPIRB for a period of at least 48 h.
- 2.5 The VHF EPIRB should be so designed as to operate under any of the following environmental conditions:
- .1 ambient temperatures of -20°C to +55°C;
 - .2 icing;
 - .3 relative wind speeds up to 100 knots; and
 - .4 after stowage, at temperatures between -30°C and +65°C.
- 2.6 The installed VHF EPIRB should:
- .1 have local manual activation; remote activation may also be provided from the navigating bridge, while the device is installed in the float-free mounting;
 - .2 be capable, while mounted on board, of operating properly over the ranges of shock and vibrations and other environmental conditions normally encountered above deck on seagoing vessels; and
 - .3 be designed to release and float free before reaching a depth of 4 m at a list or trim of any angle.

3 LABELLING

In addition to the items specified in resolution A.694(17) on general requirements, the following should be clearly indicated on the exterior of the equipment:

- .1 brief operating instructions; and
- .2 expiry date for the primary battery used.

PART B - DSC ALERTING SIGNAL

1 The VHF EPIRB DSC distress alerting signal should be transmitted on the frequency of 156.525 MHz using G2B class of emission.

2 The frequency tolerance should not exceed 10 parts per million.

3 The necessary bandwidth should be less than 16 kHz.

4 The output power should be at least 100 mW.

5 The emission should be vertically polarized at the source.

6 MODULATION

6.1 Frequency modulation with a pre-emphasis characteristic of 6 dB/octave (phase modulation) with the modulating subcarrier, should be used.

6.2 A subcarrier of 1,700 Hz with frequency shift between 1,300 Hz and 2,100 Hz should be used.

6.3 The frequency tolerance of 1,300 Hz and 2,100 Hz tones should be within ± 10 Hz.

6.4 The modulation rate should be 1,200 bauds.

6.5 The index of modulation should be $2.0 \pm 10\%$.

7 DSC MESSAGE FORMAT AND TRANSMISSION SEQUENCE

7.1 The technical characteristics for the DSC message should be in accordance with the sequence for the "distress call" specified in Recommendation ITU-R M.493.

7.2 The "nature of distress" indication should be "EPIRB emission".

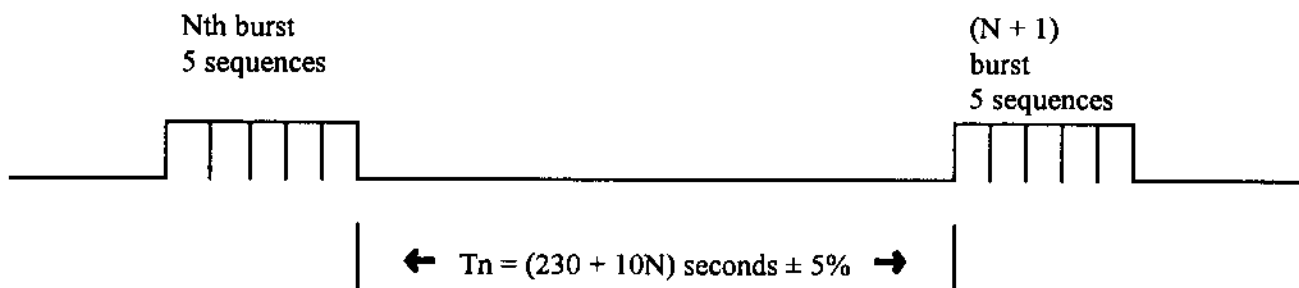
7.3 The "distress co-ordinates" and "time" information need not be included. In this case the digit 9 repeated 10 times and the digit 8 repeated 4 times should be included as specified in Recommendation ITU-R M.493.

7.4 The "type of subsequent communication" indication should be "no information" (symbol # 126) which indicates that no subsequent communications will follow.

7.5 The alerting signals should be transmitted in bursts. The (N+1) burst of transmission which consists of five successive DSC sequences should be made with an interval of T_n after the (N)th burst as given in figure 1.

Where: $T_n = (230 + 10N)$ seconds $\pm 5\%$ and $N = 1, 2, 3, \dots$

Figure 1



ANNEX 11

DRAFT REVISED ASSEMBLY RESOLUTION

**PERFORMANCE STANDARDS FOR SHIPBORNE MF/HF RADIO INSTALLATIONS
CAPABLE OF VOICE COMMUNICATION, NARROW-BAND DIRECT
PRINTING AND DIGITAL SELECTIVE CALLING**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO regulations IV/10.2.1, 10.2.2, 10.2.4 and IV/14.1 of the 1988 amendments to the 1974 SOLAS Convention concerning radiocommunications for the Global Maritime Distress and Safety System (GMDSS), which require respectively that ships be provided with a MF/HF radio installation capable of voice communications, narrow-band direct printing and digital selective calling and that such MF/HF radio installations shall conform to appropriate performance standards not inferior to those adopted by the Organization,

RECOGNIZING the need to prepare performance standards for MF/HF radio installations capable of voice communications, narrow-band printing and digital selective calling to be used in the GMDSS in order to ensure the operational reliability of such equipment and to avoid, as far as practicable, adverse interaction between such equipment and other communication and navigation equipment on board ship,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its [sixty-fifth] session,

1. ADOPTS the Recommendation on Performance Standards for MF/HF Radio Installations Capable of Voice Communication, Narrow-Band Direct Printing and Digital Selective Calling, the text of which is set out in the Annex to the present resolution;
2. RECOMMENDS Governments to ensure that shipborne MF/HF radio installations capable of voice communication, narrow-band direct printing and digital selective calling which will form part of the GMDSS installed:
 - .1 on or after [.. November 1996], conform to performance standards not inferior to those specified in the Annex to the present resolution; and
 - .2 before [.. November 1996], conform to performance standards not inferior to those specified in Annex to resolution A.613(15);
3. REVOKES resolution A.613(15).

ANNEX

RECOMMENDATION ON PERFORMANCE STANDARDS FOR SHIPBORNE MF/HF RADIO INSTALLATIONS CAPABLE OF VOICE COMMUNICATION, NARROW-BAND DIRECT PRINTING AND DIGITAL SELECTIVE CALLING

PART A - GENERAL

1 INTRODUCTION

The MF/HF radiotelephone, narrow-band direct-printing and digital selective calling installation, in addition to meeting the requirements of the Radio Regulations, and relevant ITU-R Recommendations and the general requirements set out in Assembly resolution A.694(17), should comply with the following performance standards.

2 GENERAL

2.1 The installation which may consist of more than one piece of equipment should be capable of operating on single-frequency channels or on single- and two-frequency channels.

2.2 The equipment should provide for the following categories of calling using both voice and digital selective calling (DSC):

- .1 distress, urgency and safety;
- .2 ship operational requirements; and
- .3 public correspondence.

2.3 The equipment should provide for the following categories of communications using both voice and narrow-band direct printing (NBDP):

- .1 distress, urgency and safety;
- .2 ship operational requirements; and
- .3 public correspondence.

2.4 The equipment should comprise at least:

- .1 a transmitter/receiver, including antenna(e);
- .2 an integral control unit and/or one or more separate control units;

- .3 a microphone with a press-to-transmit switch, which may be combined with a telephone in a handset;
- .4 an internal or external loudspeaker;
- .5 an integral or separate narrow-band direct-printing facility;
- .6 an integral or separate digital selective calling facility; and
- .7 a dedicated DSC watchkeeping facility to maintain a continuous watch on distress channels only. Where a scanning receiver is employed to watch more than one DSC distress channel, all selected channels should be scanned within 2 s and the dwell time on each channel should be adequate to allow detection of the dot pattern which precedes each DSC call. The scan should only stop on detection of a 100 baud dot pattern.

2.5 A distress alert should be activated only by means of a dedicated distress button. This button should not be any key of an ITU-T digital input panel or an ISO keyboard provided on the equipment.

2.6 The dedicated distress button should:

- .1 be clearly identified; and
- .2 be protected against inadvertent operation.

2.7 The distress alert initiation should require at least two independent actions.

2.8 The equipment should indicate the status of the distress alert transmission.

2.9 It should be possible to interrupt and initiate distress alerts at any time.

2.10 **POWER SUPPLY**

The MF/HF radio installation should be powered from the ship's main source of electrical energy. In addition, it should be possible to operate the MF/HF installation from an alternative source of electrical energy.

2.11 **CONTROL**

It should be possible to conduct distress and safety communications from the position, or in the vicinity of the position, from which the vessel is normally navigated.

PART B - TRANSMITTER

1 FREQUENCIES AND CLASSES OF EMISSION

1.1 The transmitter should be capable of transmitting on all frequencies allocated to the maritime mobile service in the frequency band 1,605 kHz to 27,500 kHz. As a minimum, the following frequencies should be readily accessible to the operator: the voice frequencies 2,182, 4,125, 6,215, 8,291, 12,290 and 16,420 kHz; the NBDP frequencies 2,174.5, 4,177.5, 6,268, 8,376.5, 12,520 and 16,695 kHz; and the DSC frequencies 2,187.5, 4,207.5, 6,312, 8,414.5, 12,577 and 16,804.5 kHz.

1.2 Radiotelephone frequencies are designated in terms of the carrier frequency; NBDP and DSC frequencies are designated in terms of the assigned (centre) frequency. When NBDP and DSC signals are transmitted using a transmitter in the J2B mode the (suppressed) carrier frequency should be adjusted so as to have the NBDP and the DSC signal transmitted on the assigned frequency. The selected transmitter frequency should be clearly identifiable on the control panel of the equipment.

1.3 .1 The transmitter should be capable of transmitting (upper side band signals, where appropriate) using classes of emission J3E, H3E and either J2B or F1B.

.2 When switching to the preset distress frequency 2,182 kHz, the appropriate class of emission in accordance with the Radio Regulations should be selected automatically.¹

.3 When switching to the assigned (centre) frequencies for NBDP and DSC specified in 1.1 above, classes of emission F1B or J2B should be selected automatically.¹

1.4 It should be possible to change the transmitter from any class of emission to another for which it is designed to operate by means of not more than one control.

1.5 It should be possible for the user to select transmission frequencies independent of any receiver setting. This does not preclude the use of transceivers.

1.6 It should be possible to change the transmitter quickly from operation on any frequency to operation on any other frequency, and in any event within a period not exceeding 15 s. The equipment should not be able to transmit during channel switching operations.

1.7 Means should be provided to prevent overmodulation automatically.

2 FREQUENCY ACCURACY AND STABILITY

The transmitted frequency should remain within 10 Hz of the required frequency at all times following the warming-up period.

3 OUTPUT POWER

3.1 During normal modulation, the peak envelope power in the case of J3E or H3E emissions, or the mean power in the case of J2B or F1B emissions, should be at least 60 W^2 at any frequency within the specified frequency range.

3.2 If the rated output power exceeds 400 W^3 in the band, provision should be made for reducing the output to 400 W or less. Generally, only the minimum power necessary should be used for all radio communications.

4 PERMISSIBLE WARMING-UP PERIOD

The equipment should be capable of operation within 1 min after switching on.

5 CONTINUOUS OPERATION

Continuous operation should be possible when the transmitter is adjusted to operate at its rated power.

6 CONTROLS AND INDICATORS

6.1 Provision should be made for indicating the antenna current or power delivered to the antenna. Failure of the indicating system should not interrupt the antenna circuit.

6.2 Manually tuned equipment should be fitted with a sufficient number of indicators to permit accurate and rapid tuning.

6.3 Operation of the transmit/receive control should not cause unwanted emissions.

6.4 All adjustment and controls necessary for switching the transmitter to operate on 2,182 kHz and 2,187.5 kHz should be clearly marked in order that these operations may be performed readily.

7 SAFETY PRECAUTIONS

The equipment should be so designed and constructed that when the transmitter is providing power to the antenna, the transmitter is protected against damage resulting from disconnection of the antenna or short-circuiting of antenna terminals. If this protection is provided by means of a safety device, that device should automatically be reset following removal of the antenna open-circuit or short-circuit conditions.

8 POWER SUPPLY

8.1 If it is necessary to delay the application of voltage, for example anode voltage, to any part of the transmitter after switching on, this delay should be provided automatically.

8.2 If the transmitter includes parts which are required to be heated in order to operate correctly, for example crystal ovens, the power supplies to the heating circuits should be so arranged that they can remain operative when other supplies to or within the equipment are switched off. If a special switch for the heating

circuits is provided, its functions should be clearly indicated; it shall normally be in the "on" position and be protected against inadvertent operation. The correct operating temperature should be reached within a period of 30 min after the application of power.

PART C - RECEIVERS

1 FREQUENCIES AND CLASSES OF EMISSION

1.1 The receiver should be capable of being tuned throughout the bands between 1,605 kHz and 27.5 MHz. Tuning should be either continuous, or by incremental steps, or by the selection of a number of spot frequencies considered by the Administration as adequate for the operation of the ship, or by any combination of these methods. As a minimum, the following frequencies should be readily accessible to the operator: the carrier frequencies 2,182, 4,125, 6,215, 8,291, 12,290 and 16,420 kHz for radiotelephony; the NBDP frequencies 2,174.5, 4,177.5, 6,268, 8,376.5, 12,520 and 16,695 kHz; and the DSC frequencies 2,187.5, 4,207.5, 6,312, 8,414.5, 12,577 and 16,804.5 kHz.

1.2 Radiotelephone frequencies should be designated in terms of the carrier frequency; NBDP and DSC frequencies should be designated in terms of the assigned (centre) frequency. The selected receiver frequency should be clearly identifiable on the control panel of the equipment.

1.3 The receiver should be capable of receiving upper sideband signals as appropriate for classes of emission J3E, H3E, J2B and F1B.

1.4 The class of emission should be selectable by not more than one control.

1.5 It should be possible for the user to select reception frequencies independent of any transmitter setting. This does not preclude the use of transceivers.

1.6 The receiver should be capable of being tuned to different frequencies quickly, and in any event within a period not exceeding 15 s.

2 FREQUENCY STABILITY AND ACCURACY

The receiver frequency should at all times remain within 10 Hz of the required frequency following the warming-up period.

3 USABLE SENSITIVITY

For classes of emission J3E and F1B the sensitivity of the receiver should be equal to or better than 6µV e.m.f. at the receiver input for a signal-to-noise ratio of 20 dB. For NBDP and DSC an output character error rate of 10^{-2} or less should be obtained for a signal-to-noise ratio of 12 dB.

4 RECEIVER OUTPUT

4.1 For the reception of voice signals, the receiver should be suitable for use with a loudspeaker and a telephone handset and should be capable of providing power of at least 2 W to the loudspeaker and at least 1 mW to the handset.

4.2 An output should be provided for NBDP and DSC signals if the corresponding facility is not integrated.

5 PERMISSIBLE WARMING-UP PERIOD

The equipment should be capable of operating within 1 min after switching on.

6 IMMUNITY TO INTERFERENCE

The immunity to interference of the receiver should be such that the wanted signal is not seriously affected by unwanted signals.

7 CONTROLS

The receiver should be provided with automatic gain control.

8 POWER SUPPLY

If the receiver includes parts which are required to be heated in order to operate correctly, for example crystal ovens, the power supplies to the heating circuits should be so arranged that they can remain operative when other supplies to or within the equipment are switched off. If a special switch for the heating circuits is provided, its function should be clearly indicated; it shall normally be in the "on" position and be protected against inadvertent operation. The correct operating temperature should be reached within a period of 30 min after the application of power.

PART D - DIGITAL SELECTIVE CALLING FACILITY

1 The facility should conform to the provisions of the relevant ITU-R Recommendations pertaining to the DSC system.⁴

2 The DSC facility should comprise:

- .1 means to decode and encode DSC messages;
- .2 means necessary for composing the DSC message;
- .3 means to verify the prepared message before it is transmitted;
- .4 means to display the information contained in a received call in plain language;

- .5 means for the manual entry of the position information; additionally automatic entry may be provided; and
- .6 means for the manual entry of the time at which the position was determined; additionally automatic entry may be provided.

3 DISTRESS MESSAGE STORAGE

3.1 If the received messages are not printed immediately, sufficient capacity should be provided to enable at least 20 received distress messages to be stored in the DSC facility.

3.2 These messages should be stored until readout.

4 It should be possible to initiate and make distress and safety calls from the position from which the ship is normally navigated. The means for initiating a distress call should be easy to operate and protected against inadvertent activation.

5 Initiation of the DSC distress calls should supersede any other operation of the facility.

6 Self-identification data should be stored in the DSC unit. It should not be possible for the user easily to change these data.

7 Means should be provided to enable routine testing of the DSC facilities without radiation of signals.

8 Provision should be made for a specific aural alarm and visual indication to indicate receipt of a distress or urgency call or a call having a distress category. It should not be possible to disable this alarm and indication. Provision should be made to ensure that they can be reset only manually.

PART E - NARROW-BAND DIRECT-PRINTING (NBDP) FACILITY

1 The facility should conform to the relevant ITU-R Recommendations pertaining to the NBDP system⁵. It should provide for the use of maritime mobile service identities in accordance with Appendix 43 of the ITU Radio Regulations. The facility should be capable of operating in the FEC and ARQ modes on the single-frequency channels allocated for distress NBDP operation.

2 Self-identification data should be stored in the NBDP unit. It should not be possible for the user easily to change these data.

3 The NBDP facility should comprise:

- .1 means to decode and encode messages;
- .2 means for composing and verifying messages to be transmitted; and
- .3 means for providing a record of received messages.

1. For existing transmitters, during the transition and amortization period, classes of emission may be selected manually.
2. Note should be taken that in some areas of the world a 60 W value may not be adequate to ensure reliable communications. A value greater than 60 W may be required in these areas.
3. The Radio Regulations (RR 4357) specify a 400 W maximum power for equipment operating in the MF band in region 1.
4. Class A DSC equipment conforming to Recommendation ITU-R M.493 should be used to meet this requirement.
5. NBDP equipment conforming to Recommendation ITU-R M.476 may be used until the cost is amortized. It is recommended that newly installed NBDP equipment should conform to Recommendation ITU-R M.625.

ANNEX 12

DRAFT REVISED ASSEMBLY RESOLUTION

**PERFORMANCE STANDARDS FOR FLOAT-FREE SATELLITE EMERGENCY
POSITION-INDICATING RADIO BEACONS OPERATING
THROUGH THE GEOSTATIONARY INMARSAT
SATELLITE SYSTEM ON 1.6 GHZ**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO regulations IV/7.1.6 and IV/14.1 of the 1988 amendments to the 1974 SOLAS Convention concerning radiocommunications for the Global Maritime Distress and Safety System (GMDSS), which require respectively that ships be provided with a satellite emergency position-indicating radio beacon (EPIRB) and that such EPIRBs shall conform to appropriate performance standards not inferior to those adopted by the Organization,

RECOGNIZING the need to prepare performance standards for float-free satellite EPIRBs operating through the geostationary Inmarsat satellite system on 1.6 GHz to be used in the GMDSS in order to ensure the operational reliability of such equipment and to avoid, as far as practicable, adverse interaction between such equipment and other communication and navigation equipment on board ship,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its [sixty-fifth] session,

1. ADOPTS the Recommendation on Performance Standards for Float-Free Satellite EPIRBs Operating through the Geostationary Inmarsat Satellite System on 1.6 GHz, the text of which is set out in the Annex to this resolution;
2. RECOMMENDS Governments to ensure that float-free satellite EPIRBs operating through the geostationary Inmarsat satellite system on 1.6 GHz which form part of the GMDSS installed:
 - .1 on or after [.. November 1996], conform to performance standards not inferior to those specified in the Annex to the present resolution; and
 - .2 before [.. November 1996], conform to performance standards not inferior to those specified in the Annex to resolution A.661(16);
3. INVITES Inmarsat to ensure that any amendments in the specification for Inmarsat 1.6 GHz distress beacons be agreed with the Organization prior to their implementation;
4. REQUESTS the Maritime Safety Committee to ensure that any proposed amendments to this resolution be agreed with Inmarsat prior to their consideration by the Assembly.
5. REVOKES resolution A.661(16).

ANNEX

RECOMMENDATION ON PERFORMANCE STANDARDS FOR FLOAT-FREE SATELLITE EPIRBs OPERATING THROUGH THE GEOSTATIONARY INMARSAT SATELLITE SYSTEM ON 1.6 GHZ

PART A - GENERAL

1 INTRODUCTION

The satellite emergency position-indicating radiobeacon (EPIRB) should, in addition to meeting the requirements of the Radio Regulations, the relevant ITU-R Recommendations, the relevant Inmarsat technical requirements, and the general requirements set out in resolution A.694(17), comply with the following performance standards.

2 GENERAL

2.1 The satellite EPIRB should be capable of transmitting a distress alert to a geostationary satellite.

2.2 The satellite EPIRB should be of an automatic float-free type. The equipment should be reliable even under extreme conditions.

2.3 The performance of the float-free arrangements should be in accordance with the requirements of the performance standards for float-free release and activation arrangements for emergency radio equipment, set out in Assembly resolution A.662(16).

2.4 The satellite EPIRB should:

- .1 be fitted with adequate means to prevent inadvertent activation;
- .2 be so designed that the electrical portions are watertight at a depth of 10 m for at least 5 min. Consideration should be given to a temperature variation of 45°C during transitions from the mounted position to immersion. The harmful effects of a marine environment, condensation and water leakage should not affect the performance of the beacon;
- .3 be automatically activated after floating free;
- .4 be continuously provided with the ship's position data for automatic inclusion in the distress message when activated;
- .5 be equipped with a search and rescue radar transponder unless integral facilities are included for automatic position updating after activation;

- .6 be capable of manual activation and manual deactivation;
- .7 be provided with means to indicate that signals are being emitted;
- .8 be capable of floating upright in calm water and have positive stability and sufficient buoyancy in all sea conditions;
- .9 be capable of being dropped into the water without damage from a height of 20 m;
- .10 be capable of being tested without using the satellite system to determine that the EPIRB is capable of operating properly;
- .11 be of highly visible yellow/orange colour and be fitted with retro-reflective material;
- .12 be equipped with a buoyant captive lanyard suitable for use as a tether, which should be so arranged as to prevent its being trapped in the ship's structure when floating free;
- .13 be provided with a low duty cycle light (0.75 cd) activated by darkness to indicate its position for the survivors nearby and rescue units;
- .14 not be unduly affected by seawater or oil or both; and
- .15 be resistant to deterioration by prolonged exposure to sunlight.

2.5 The battery should have sufficient capacity to operate:

- .1 the distress alerting transmitter for 4 h in accordance with Recommendation ITU-R M.632 or for at least 48 h if integral facilities are included for automatic position updating; and
- .2 any other facilities (e.g. SART and flashing light) for at least 48 h.

2.6 The satellite EPIRB should be so designed as to operate under any of the following environmental conditions:

- .1 ambient temperature of -20°C to +55°C;
- .2 icing;
- .3 relative wind speeds up to 100 knots; and
- .4 after stowage at temperature between -30°C and [+65°C] [+70°C].

2.7 The installed satellite EPIRB should:

- .1 have local manual activation, remote activation may also be provided from the navigating bridge, while the device is installed in the float-free mounting;
- .2 be capable, while mounted on board, of operating properly over the ranges of shock and vibrations and other environmental conditions normally encountered above deck on seagoing vessels; and
- .3 be designed to release itself and float free before reaching a depth of 4 m at a list or trim of any angle.

2.8 Any connection to the EPIRB, e.g. for the purpose of supply of data or power, should be corrosion resistant and protected against accidental disconnection.

3 DISTRESS FUNCTION

3.1 When the satellite EPIRB is manually operated a distress alert should be initiated only by means of a dedicated distress alert activator.

3.2 The dedicated activator should:

- .1 be clearly identified; and
- .2 be protected against inadvertent operation.

3.3 Manual distress alert initiation should require at least two independent actions.

3.4 The satellite EPIRB should not be automatically activated after being manually removed from the release mechanism.

4 LABELLING

In addition to the items specified in resolution A.694(17) - General requirements, the following should be clearly indicated on the exterior of the equipment:

- .1 brief operating instructions; and
- .2 expiry date for the primary batteries used.

PART B - SATELLITE SIGNAL

1 The satellite EPIRB should include facilities to transmit in the 1,644.3-1,644.5 MHz frequency band and, after full implementation of the second generation Inmarsat space segment, in the frequency band 1,645.5-1,646.5 MHz only. Alternatively, the satellite EPIRB distress alert could be transmitted sequentially in the 1,644.3-1,644.5 MHz frequency band and the

frequency band 1,645.5-1,646.5 MHz. After full implementation of the second generation Inmarsat space segment, the emission should be limited to the frequency band 1,645.5-1,646.5 MHz only.

[2 The technical characteristics of the transmitted signal and the message format should be in accordance with Recommendation ITU-R M.632.

3 The ship station identity should be made part of all messages and should be in accordance with Recommendation ITU-R M.585.]¹

1. Inmarsat will propose amendments based on paragraph 11.13 of COM 40/22.

ANNEX 13

DRAFT REVISED ASSEMBLY RESOLUTION

**PERFORMANCE STANDARDS FOR INMARSAT-C SHIP EARTH
STATIONS CAPABLE OF TRANSMITTING AND RECEIVING
DIRECT-PRINTING COMMUNICATIONS**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO regulations IV/8.1.5.1, IV/9.3.2, IV/10.1.1 and IV/14.1 of the 1988 amendments to the 1974 SOLAS Convention concerning radiocommunications for the Global Maritime Distress and Safety System (GMDSS), which require respectively, that ships be provided with an Inmarsat-C ship earth station capable of transmitting and receiving direct-printing communications and that such ship earth stations shall conform to appropriate performance standards not inferior to those adopted by the Organization,

RECOGNIZING the need to prepare performance standards for Inmarsat-C ship earth stations operating through the geostationary Inmarsat satellite system to be used in the GMDSS in order to ensure the operational reliability of such equipment and to avoid, as far as practicable, adverse interaction between such equipment and other communication and navigation equipment on board ship,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its [sixty-fifth] session,

1. ADOPTS the Recommendation on Performance Standards for Inmarsat-C Ship Earth Stations Capable of Transmitting and Receiving Direct-Printing Communications, the text of which is set out in the Annex to the present resolution;
2. NOTES that part A of the Inmarsat-C design and installation guidelines is similar to the present performance standards for Inmarsat-C ship earth stations and to the performance standards for shipborne radio equipment - general requirements (resolution A.694(17));
3. RECOMMENDS Governments to ensure that every Inmarsat-C ship earth station which forms part of the GMDSS installed:
 - .1 on or after [.. November 1996], conform to performance standards not inferior to those specified in the Annex to the present resolution,
 - .2 before [.. November 1996], conform to performance standards not inferior to those specified in the Annex to resolution A.663(16);

which are in accordance with part A of the Inmarsat design and installation guidelines;

4. INVITES Inmarsat to ensure that any amendments to part A of the Inmarsat-C design and installation guidelines be agreed with the Organization prior to their implementation;
5. REQUESTS the Maritime Safety Committee to ensure that any proposed amendments to this resolution be agreed with Inmarsat prior to their consideration by the Assembly;
6. REVOKES resolution A.663(16).

ANNEX

RECOMMENDATION ON PERFORMANCE STANDARDS FOR INMARSAT-C SHIP EARTH STATIONS CAPABLE OF TRANSMITTING AND RECEIVING DIRECT-PRINTING COMMUNICATIONS

1 INTRODUCTION

1.1 The Inmarsat-C ship earth station installation capable of transmitting and receiving direct-printing communications should comply with the general requirements set out in Assembly resolution A.694(17) and with the following minimum performance requirements.

1.2 The performance of any enhanced group call facility provided by the ship earth station should be in accordance with the performance standards for the enhanced group call equipment set out in resolution A.664(16).

2 TECHNICAL REQUIREMENTS

The ship earth station should be type-approved by Inmarsat and should comply with the environmental conditions specified in its technical requirements for Inmarsat-C ship earth stations.

3 OPERATION

3.1 No control external to the equipment should be available for alteration of the ship station identity.

3.2 It should be possible to initiate and make distress calls from the position from which the ship is normally navigated and from at least one other position designated for distress alerting.

3.3 A distress alert should be activated only by means of a dedicated distress button. This button should not be any key of an ITU-T digital input panel or an ISO keyboard provided on the equipment.

3.4 The dedicated distress button should:

- .1 be clearly identified; and
- .2 be protected against inadvertent operation.

3.5 The distress alert initiation should require at least two independent actions.

3.6 The equipment should indicate the status of the distress alert transmission.

3.7 It should be possible to interrupt and initiate distress alerts at any time.

3.8 Provisions should be made for:

- .1 automatic and manual entry of the position information; and
- .2 automatic and manual entry of the time at which the position was determined.

4 RADIO FREQUENCY HAZARDS

In order to permit a warning of potential radiation hazards to be displayed in appropriate locations, a label should be attached to the radome indicating the distances external to the radome at which radiation levels of 100 W/m^2 , 25 W/m^2 and 10 W/m^2 exist. However, the distances which are within a radome need not be indicated.

5 POWER SUPPLY

5.1 The ship earth station should normally be powered from the ship's main source of electrical energy. In addition, it should be possible to operate the ship earth station and all equipment necessary for its normal functioning, including the antenna tracking system, where provided, from an alternative source of energy.

5.2 Changing from one source of supply to another or any interruption of up to 60 s duration of the supply of electrical energy should not require the equipment to be manually re-initialized and should not result in loss of received messages stored in the memory.

6 ANTENNA SITING

6.1 Where an omnidirectional antenna is used it should, if practicable, be sited in such a position that no obstacle likely to degrade significantly the performance of the equipment appears in the fore and aft directions down to -5° and in the port and starboard directions down to -15° . For omnidirectional antennas, objects, especially those within 1 m of the antenna, which cause a shadow sector of greater than 2° , are likely to degrade significantly the performance of the equipment.

6.2 Where a stabilized directive antenna is used it should, if practicable, be sited in such a position that no obstacle, likely to degrade significantly the performance of the equipment, appears in any azimuth down to -5° . For directive antennas with a gain of approximately 20 dB, objects, especially those within 10 m of the antenna, which cause a shadow sector of greater than 6° , are likely to degrade significantly the performance of the equipment.

ANNEX 14

DRAFT REVISED ASSEMBLY RESOLUTION

PERFORMANCE STANDARDS FOR SHIP EARTH STATIONS
CAPABLE OF TWO-WAY COMMUNICATIONS

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO regulations IV/10.1 and IV/14.1 of the 1988 amendments to the 1974 SOLAS Convention concerning radiocommunications for the Global Maritime Distress and Safety System (GMDSS) which require respectively that ships remaining in sea area A3 be provided with an Inmarsat ship earth station and that such ship earth stations shall conform to appropriate performance standards not inferior to those adopted by the Organization,

RECOGNIZING the need to prepare performance standards for satellite communication equipment in order to ensure the operational reliability of such equipment and to avoid, as far as practicable, adverse interaction between satellite communication equipment and other communication and navigation equipment aboard the ship,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its [sixty-fifth] session,

1. ADOPTS the Recommendation on Performance Standards for Ship Earth Stations Capable of Two-Way Communications set out in the Annex to this resolution;

2. NOTES that part A of the Inmarsat design and installation guidelines is similar to the performance standards for ship earth stations capable of two-way communications and to the general requirements for shipborne radio equipment set out in resolution A.694(17);

3. RECOMMENDS Governments ensure that every ship earth station forming part of the GMDSS, installed:

- .1 on or after [.. November 1996], conform to performance standards not inferior to those specified in the Annex to the present resolution; and
- .2 before [.. November 1996], conform to performance standards not inferior to those specified in the Annex to resolution A.698(17),

which are in accordance with part A of the Inmarsat ship earth station design and installation guidelines;

4. INVITES Inmarsat to ensure that any amendments to part A of the ship earth station design and installation guidelines be agreed with the Organization prior to their adoption;

5. REQUESTS the Maritime Safety Committee to ensure that any proposed amendments to this resolution be agreed with Inmarsat prior to their adoption;
6. REVOKES resolution A.698(17).

ANNEX

RECOMMENDATION ON PERFORMANCE STANDARDS FOR SHIP EARTH STATIONS CAPABLE OF TWO-WAY COMMUNICATIONS

1 INTRODUCTION

The ship earth station installation capable of telephony and direct printing should comply with the general requirements set out in Assembly resolution A.694(17) and with the following minimum requirements.

2 TECHNICAL REQUIREMENTS

The equipment should be type approved by Inmarsat and should comply with the environmental conditions specified in its technical requirements for Inmarsat ship earth stations capable of two-way communications.

3 OPERATION

3.1 No control external to the equipment should be available for alteration of the ship station identity.

3.2 It should be possible to initiate and make distress calls by telephony or direct printing from the position at which the ship is normally navigated and from any other position designated for distress alerting. In addition, where a room is provided for radiocommunications, means to initiate distress calls should also be fitted in that room.

3.3 Where no other means of receiving distress, urgency and safety broadcasts or an addressed distress alert relay are provided and existing levels of aural signals produced by the telephone or teletype are considered to be inadequate, the ship earth equipment should be configured to actuate an aural/visual alarm of appropriate level.

3.4 A distress alert should be activated only by means of a dedicated distress button. This button should not be any key of an ITU-T digital input panel or an ISO keyboard provided on the equipment.

3.5 The dedicated distress button should:

- .1 be clearly identified; and
- .2 be protected against inadvertent operation.

3.6 The distress alert initiation should require at least two independent actions.

3.7 The equipment should indicate the status of the distress alert transmission.

3.8 It should be possible to interrupt and initiate distress alerts at any time.

4 RADIO FREQUENCY HAZARDS

In order to permit warning of potential radiation hazards to be displayed in appropriate places, a label should be attached to the radome indicating the distance at which radiation levels of 100 W/m², 25 W/m² and 10 W/m² exist.

5 POWER SUPPLY

5.1 The ship earth station should normally be powered from the ship's main source of electrical energy. In addition, it should be possible to operate the ship earth station and all equipment necessary for its normal functioning, including the antenna tracking system, from an alternative source of energy.

5.2 Changing from one source of supply to another or any interruption up to 60 s of the supply of electrical energy should not render the equipment inoperative or require the equipment to be re-initialized.

6 ANTENNA SITING

6.1 It is desirable that the antenna be sited in such a position that no obstacles likely to significantly degrade the performance of the equipment appear in any azimuth down to an angle of elevation of -5°.

6.2 The siting of the antenna needs careful consideration, taking into account the adverse effect of high levels of vibration which might be introduced by the use of a tall mast and the need to minimize shadow sectors. Objects, especially those within 10 m of the radome which cause a shadow sector of greater than 6°, are likely to significantly degrade the performance of the equipment.

6.3 The above-deck equipment should be separated, as far as is practicable, from the antennae of other communication and navigation equipment.

ANNEX 15

DRAFT REVISED ASSEMBLY RESOLUTION

**PERFORMANCE STANDARDS FOR FLOAT-FREE SATELLITE EMERGENCY
POSITION-INDICATING RADIO BEACONS (EPIRBs)
OPERATING ON 406 MHz**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO regulations IV/7.1.6 and IV/14.1 of the 1988 amendments to the 1974 SOLAS Convention concerning radiocommunications for the Global Maritime Distress and Safety System (GMDSS), which require respectively that ships be provided with a satellite emergency position-indicating radio beacon (EPIRB) and that such EPIRBs shall conform to appropriate performance standards not inferior to those adopted by the Organization,

RECOGNIZING the need to prepare performance standards for float-free satellite EPIRBs operating through a polar-orbiting satellite system on 406 MHz to be used in the GMDSS in order to ensure the operational reliability of such equipment and to avoid, as far as practicable, adverse interaction between such equipment and other communication and navigation equipment on board ship,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its [sixty-fifth] session,

1. ADOPTS the Recommendation on Performance Standards for Float-Free Satellite Emergency Position-Indicating Radio Beacons (EPIRBs) Operating on 406 MHz, set out in the Annex to the present resolution;
2. RECOMMENDS Governments to ensure that float-free satellite EPIRBs operating on the frequency 406 MHz, which form part of the GMDSS, installed:
 - .1 on or after [.. November 1996], conform to performance standards not inferior to those specified in the Annex to the present resolution;
 - .2 before [.. November 1996], conform to performance standards not inferior to those specified in the Annex to the resolution A.763(18); and
 - .3 before [4 November 1994], conform to performance standards not inferior to those specified in the Annex to resolution A.763(18) except that they need not be provided with a 121.5 MHz homing beacon required by paragraph 2.3.14 of part A thereof;
3. INVITES the COSPAS-SARSAT partners to ensure that any amendments to the specification for COSPAS-SARSAT 406 MHz distress beacons be agreed with the Organization prior to their adoption;

4. REQUESTS the Maritime Safety Committee to ensure that any proposed amendments to this resolution be agreed with the COSPAS-SARSAT partners prior to their adoption;
5. REQUESTS ALSO the Maritime Safety Committee to review the code assignment method recommended in paragraph 4, part B, of the Annex to this resolution prior to 1 February 1997;
6. REVOKES resolution A.763(18).

ANNEX

RECOMMENDATION ON PERFORMANCE STANDARDS FOR FLOAT-FREE SATELLITE EMERGENCY POSITION-INDICATING RADIO BEACONS (EPIRBs) OPERATING ON 406 MHz

Part A - General

1 INTRODUCTION

The satellite emergency position-indicating radio beacon (EPIRB) should, in addition to meeting the requirements of the Radio Regulations, the relevant ITU-R Recommendations and the general requirements set out in resolution A.694(17), comply with the following performance standards.

2 GENERAL

2.1 The satellite EPIRB should be capable of transmitting a distress alert to a polar orbiting satellite.

2.2 The EPIRB should be of an automatic float-free type. The equipment, mounting and releasing arrangements should be reliable and operate satisfactorily under the most extreme conditions likely to be met with at sea.

2.3 The satellite EPIRB should:

- .1 be fitted with adequate means to prevent inadvertent activation;
- .2 be so designed that the electrical portions are watertight at a depth of 10 m for at least 5 min. Consideration should be given to a temperature variation of 45°C during transitions from the mounted position to immersion. The harmful effects of a marine environment, condensation and water leakage should not affect the performance of the beacon;
- .3 be automatically activated after floating free;
- .4 be capable of manual activation and manual deactivation;
- .5 be provided with means to indicate that signals are being emitted;
- .6 be capable of floating upright in calm water and have positive stability and sufficient buoyancy in all sea conditions;
- .7 be capable of being dropped into the water without damage from a height of 20 m;
- .8 be capable of being tested, without using the satellite system, to determine that the EPIRB is capable of operating properly;

- .9 be of highly visible yellow/orange colour and be fitted with retroreflecting material;
 - .10 be equipped with a buoyant lanyard suitable for use as a tether, which should be so arranged as to prevent its being trapped in the ship's structure when floating free;
 - .11 be provided with a low duty cycle light (0.75 cd) active during darkness to indicate its position to nearby survivors and rescue units;
 - .12 not be unduly affected by seawater and/or oil;
 - .13 be resistant to deterioration in prolonged exposure to sunlight; and
 - .14 be provided with a 121.5 MHz beacon primarily for homing by aircraft.
- 2.4 The battery should have sufficient capacity to operate the satellite EPIRB for a period of at least 48 h.
- 2.5 The satellite EPIRB should be so designed as to operate under any of the following environmental conditions:
- .1 ambient temperatures of -20°C to +55°C;
 - .2 icing;
 - .3 relative wind speeds up to 100 knots; and
 - .4 after stowage at temperatures between -30°C and +70°C.
- 2.6 The installed satellite EPIRB should:
- .1 have local manual activation; remote activation may also be provided from the navigating bridge, while the device is installed in the float-free mounting;
 - .2 be capable, while mounted on board, of operating properly over the ranges of shock and vibration and other environmental conditions normally encountered above deck on seagoing vessels; and
 - .3 be designed to release itself and float free before reaching a depth of 4 m at a list or trim of any angle.
- 3 DISTRESS FUNCTION**
- 3.1 When the satellite EPIRB is manually operated a distress alert should be initiated only by means of a dedicated distress alert activator.
- 3.2 The dedicated activator should:

- .1 be clearly identified; and
- .2 be protected against inadvertent operation.

3.3. Manual distress alert initiation should require at least two independent actions.

3.4 The satellite EPIRB should not be automatically activated after being manually removed from the release mechanism.

4 LABELLING

In addition to the items specified in resolution A.694(17) on general requirements, the following should be clearly indicated on the exterior of the equipment:

- .1 brief operating instructions;
- .2 expiry date for the primary battery used; and
- .3 the identity code programmed into the transmitter.

Part B - Satellite signals

1 The satellite EPIRB distress alerting signal should be transmitted on the frequency of 406.025 MHz using G1B class of emission.

2 The technical characteristics of the transmitted signal and the message format should be in accordance with Recommendation ITU-R M.633.

3 Provisions should be included for storing the fixed portion of the distress message in the satellite EPIRB using non-volatile memory.

4 A unique beacon identification code shall be made part of all messages.

Until 1 February 1999, this identification code shall include 3 digit code for the country of registration followed by either:

- .1 the trailing 6 digits of the ship station identity in accordance with appendix 43 of ITU Radio Regulations; or
- .2 a unique serial number; or
- .3 a radio call sign.

Preference is given to method .1.

After 1 February 1999, all new beacon installations should be in accordance with method .1¹.

- 5 The 121.5 homing signal should:
- .1 have a continuous duty cycle except that it may be interrupted for up to a maximum of 2 seconds during the transmission of the 406 MHz signal;
 - .2 with the exception of the sweep direction, meet the technical characteristics from Appendix 37A of the Radio Regulations. The sweep may be either upward or downward.

1. The code assignment method is to be reviewed prior to 1 February 1997.

ANNEX 16

DRAFT ASSEMBLY RESOLUTION

**GENERAL REQUIREMENTS FOR ELECTROMAGNETIC COMPATIBILITY (EMC)
FOR ALL ELECTRICAL AND ELECTRONIC SHIP'S EQUIPMENT**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO resolution A.694(17) which requires that all reasonable and practical steps should be taken to ensure electromagnetic compatibility between the equipment concerned and other radiocommunication and navigational equipment carried on board in accordance with relevant requirements of chapter IV and chapter V of the International Convention for the Safety of Life at Sea, 1974,¹

NOTING the growing number of problems experienced with equipment being susceptible to electromagnetic interference which can result in dangerous situations,

NOTING ALSO that some standards on electromagnetic compatibility have been developed,

RECOGNIZING the need to prepare standards on electromagnetic compatibility for all electrical and electronic ship's equipment to ensure operational reliability and suitability of such equipment,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its [sixty-fifth] session,

INVITES Governments to ensure that all ship's electrical and electronic equipment is tested to the relevant electromagnetic compatibility standards.

1. IEC Publications 533 and 945.

ANNEX 17

DRAFT COM CIRCULAR

**GUIDELINES FOR USE IN EVALUATING REGIONAL
MOBILE SATELLITE SYSTEMS**

1 The Sub-Committee on Radiocommunications, at its fortieth session (16 to 20 January 1995), noted that the International Convention for the Safety of Life at Sea (SOLAS), 1974, does not prevent the use, by any ship, survival craft or person in distress, of any means at their disposal to attract attention, make known their position and obtain help. The Sub-Committee agreed that, for the above purpose, the use of equipment operating in regional mobile satellite systems may be considered. However, Governments should ensure that equipment operating in radiocommunication services required by SOLAS chapter IV to be used in the Global Maritime Distress and Safety System (GMDSS), is provided on ships subject to the SOLAS Convention, and on other ships wishing to participate in the GMDSS, both to enhance the safety of the ships concerned and to enable them to receive distress alerts and communicate with other ships, survival craft and persons in distress.

2 To assist Administrations in evaluating regional mobile satellite system, which may be used for maritime distress and safety radiocommunication purposes, the Sub-Committee developed the Guidelines annexed hereto.

ANNEX

GUIDELINES FOR ADMINISTRATIONS IN THE EVALUATION OF REGIONAL MOBILE SATELLITE SYSTEMS

1 INTRODUCTION

1.1 Some regional mobile satellite systems may offer facilities for maritime distress and safety communications. Careful consideration is needed when evaluating these systems for this purpose.

2 DEFINITIONS

2.1 "GMDSS Radio Systems" means the radio systems forming part of the Global Maritime Distress and Safety System (GMDSS) are those set out in chapter IV, regulation 5 of the International Convention for the Safety of Life at Sea (SOLAS 74), 1974, as amended in 1988.

2.2 "Regional Mobile Satellite System" means a satellite system providing a service to a limited area or region.

3 CONSIDERATIONS IN EVALUATING REGIONAL SATELLITE SYSTEMS FOR MARITIME DISTRESS AND SAFETY COMMUNICATIONS

3.1 The responsibility for evaluating regional mobile satellite systems to provide maritime distress and safety communications rests with the Administration concerned. This evaluation should be based on a thorough testing of the system.

3.2 In this evaluation, Administrations should take account of all the principles laid down by the Organization. In addition, regional mobile satellite systems should operate in accordance with the provisions of the ITU Radio Regulations and fulfil the technical and operational requirements of the Organization, including priority arrangements for maritime distress and safety radiocommunications.

3.3 The Administration should consider the need of preserving the safety for all ships, including those not equipped for the regional mobile satellite system. In this regard, it should be noted that mobile satellite systems can only perform some of the GMDSS radiocommunication functions, see also paragraph 3.9.

3.4 Ship earth stations operating in regional mobile satellite systems should conform to performance standards not inferior to those adopted by the Organization.

3.5 The Administrations should ensure users are fully aware of the capabilities and limitations of regional mobile satellite systems.

3.6 The need of preserving the global uniformity of the radiocommunication processes within the GMDSS framework and the importance of efficient, unambiguous and fast ship-to-shore, shore-to-ship and

ship-to-ship distress and safety communication processes must be borne in mind when evaluating regional mobile satellite systems.

3.7 The Administration should ensure that a current database of mobile earth station identities for ships using regional mobile satellite systems is made available to rescue co-ordination centres (RCC).

3.8 Regardless of the use made of regional mobile satellite systems, the Administration should ensure that all relevant information concerning distress alerts, distress communications, search and rescue communications and maritime safety information is immediately transmitted to other ships via the appropriate GMDSS radio systems.

3.9 Regional mobile satellite systems cannot perform the functional requirements set out in regulations 4.1.3, 4.1.5, 4.1.6, and 4.1.9 of chapter IV of SOLAS 74, as amended in 1988; see Appendix.

3.10 An Administration permitting use of such regional mobile satellite systems on board their ships should ensure that these ships are fully equipped for all GMDSS functions.

3.11 All ships fitted with a mobile earth station operating in a regional mobile satellite system should be provided with adequate documentation stating clearly the service area of the system and listing the equipment installed.

3.12 The Administration should ensure that the radio personnel of such ships are:

- .1 educated in the use of the mobile earth station for distress and safety purposes and certified to that effect;
- .2 instructed on the importance of using the radiocommunication functions of the GMDSS, especially the ship-to-ship distress and safety functions, as these functions are not covered by regional mobile satellite systems; see Appendix.

3.13 Ships fitted for the GMDSS in accordance with the relevant provisions of chapter IV of SOLAS 74 Convention, as amended in 1988, are not required to be fitted with equipment for regional mobile satellite systems.

APPENDIX

GMDSS function	Remarks
Ship-to-shore alert	See Note 1
Shore-to-ship alert	See Note 2
Ship-to-ship alerting	Regional mobile satellite systems cannot substitute the relevant GMDSS radio system
SAR communication ship-to-shore	See Note 1
SAR communication shore-to-ship	See Note 2
On-scene communication	Regional mobile satellite systems cannot substitute the relevant GMDSS radio system
Ship transmit locating signal	Regional mobile satellite systems cannot substitute the relevant GMDSS radio system
Ship receive locating signal	As above
Ship transmit MSI to shore	See Note 1
Ship receive MSI from shore	See Note 2
Ship-to-ship MSI	Regional mobile satellite systems cannot substitute the relevant GMDSS radio system
General com. ship-to-shore	Regional mobile satellite systems may be used
General com. shore-to-ship	Regional mobile satellite systems may be used
General com. ship-to-ship	Regional mobile satellite systems may be used between ships fitted for that system
Bridge-to-bridge com.	Regional mobile satellite systems cannot substitute the relevant GMDSS radio system

Note 1. Regional mobile satellite systems may be used for this purpose, provided that the responsible shore authority immediately relay the same or all relevant information to other ships in the area via the relevant GMDSS radio system(s).

Note 2. Regional mobile satellite systems may be used for this purpose, provided that the same or all relevant information is also transmitted immediately to other ships in the area via the relevant GMDSS radio system(s).

ANNEX 18

RECOMMENDED IMO POSITIONS ON CERTAIN RECOMMENDATIONS OF THE VGE**FINAL REPORT OF THE ITU VOLUNTARY GROUP OF EXPERTS (VGE)****TO STUDY ALLOCATION AND IMPROVED USE OF THE RADIO FREQUENCY SPECTRUM AND SIMPLIFICATION OF THE RADIO REGULATIONS**

- 1 VGE 1/7:- WRCs should, wherever possible, allocate frequency bands to the most broadly defined services to provide the maximum flexibility to Administrations in spectrum use, taking into account technical, operational, economic and other relevant factors.**

This recommendation envisages the merging of some services (notably mobile and radiodetermination services) to provide greater flexibility in the utilization of certain frequency bands.

Recommended position:

- .1 The merging of all MOBILE and MOBILE SATELLITE component services under this generic title is not acceptable since maritime allocations must be exclusive to permit the necessary world-wide standardization of equipment and services. The maritime radio services are essential for safety of life and, increasingly important, the safe movement of ships particularly those carrying hazardous cargo.
- .2 RADIONAVIGATION cannot be merged with RADIOLOCATION under the service designation of RADIODETERMINATION. RADIONAVIGATION is a safety service and, as such, requires special measures to protect against harmful interference as indicated in RR 953 of the International Radio Regulations. The merging of (maritime) radio navigation with other services may result in the loss of its recognition as a safety service and its special status in regard to interference. Maritime radio navigation allocations must be exclusive to allow world-wide standardization in the same way as for the other maritime radio services.

- 2 VGE Rec 2/1:- The contents of Chapter SIII comprising Articles S7-S9 and S11-S14 be adopted as replacements for the related provisions of the present Articles 11 to 17 excluding 16.**

This recommendation envisages rationalizing the existing procedures for frequency co-ordination. Of interest is the recommendation apropos future of RR 1633-44. In effect, the VGE suggest ITU no longer undertake operational coordination for NAVTEX services; proposed 'new' regulation 9.20 may then be deleted.

Recommended position - These proposals are acceptable. IMO can support the deletion of proposed new regulation 9.20; NAVTEX coordination would be solely undertaken by the IMO Co-ordinating Panel on NAVTEX.

3 VGE Rec 3/1:- Specific Recommendations for Simplification

- .1 **Article 6 and 9; special rules for the assignment of frequencies - should be combined into a single article with no real change of substance etc.**

This article contains regulations of importance to maritime services, e.g. RRs 953, 959, 964.

Recommended Position - Providing there is no change in substance made to these provisions, this proposal is acceptable.

- .2 **Articles 18, 19, 21 and 22 - Should be combined into a single article covering all aspects of interference etc.**

These measures to prevent and remove interference to radio services are of prime importance to maritime services. In particular the following regulations: RRs 1803, 1810, 1812, 1814, 1815, 1845, 1951, 1952 1957, 1960.

Recommended Position - Providing the regulations listed above remain in the body of the Radio Regulations in some form, this proposal is acceptable.

- .3 **Articles 25 - Existing provisions should be retained with no change in substance with the addition of some provisions from Appendix 43 (Appendices 42 and 44, and the remaining provisions of Appendix 43 are to be deleted from the Radio Regulations on the understanding that the material will be published by the bureau in the future.)**

Article 25 relates to the identification of stations. Appendices 42, 43 and 44 respectively detail: Table of Allocation of International Call Signs, Maritime Mobile Service Identities (MMSI) with associated Table of Allocation and the Table of Allocation of Ship Station Selective Call Numbers and Coast Station Identification Numbers. Those sections of Appendix 43 apropos allocation of MMSIs are moved into the body of the Regulations; effectively strengthening those provisions relating to the allocation of MMSIs. The VGE also comment on the problems relating to the application of Article 25 and recommend much more expert study is required before any further changes to Article 25 are considered requesting the Secretary-General of ITU arrange for the appropriate studies.

Recommended Position - This proposal is, in general, acceptable. The movement of text from Appendix 43 relating to the allocation of MMSIs to the main body of the Radio Regulations should be supported.

The VGE's request for more study to be undertaken into the questions raised through the application of Article 25 should be strongly endorsed.

- .4 Article 26 - Should be substantially changed as a result of giving responsibility for much of the details related to service documents to the Bureau. In addition, certain obsolete publications are deleted.**

Article 26 prescribes the documents to be provided by the ITU Secretariat, their format and frequency of publication and the obligations of Administrations to keep these documents up to date. A number of these are of relevance to the maritime community and prescribed as carriage requirements on ships by the ITU Convention. For RCCs, the List of Ship Stations and List of Call Signs etc. are essential. They are the only documents which enable the name/details of a ship to be readily established following receipt of a coded identity; e.g. MMSI.

Recommended Position - Although some RCCs now have direct access to the ITU's database providing information on call sign/MMSI allocations/List of Ship Stations etc., many do not. Until such time as all RCCs have access - or a dedicated, comprehensive, SAR database is available - it is essential standards are maintained at current levels. The following regulations, at least, must remain within the body of the Radio Regulations in some form: RR 2204-2211 and RR 2215-2218. The proposal to delegate responsibility for defining content and frequency of publication of other documents to the Bureau is, however, acceptable.

- .5 Article 35 - Several detailed provisions relating to radiobeacons should be transferred to a new appendix.**

This article contains material of interest to the maritime radio navigation service.

Recommended Position - the proposal to transfer Article 35 without change to a new appendix is acceptable provided the status is not diminished.

4 VGE Rec No. 3/2 - Distress and Safety

- .1 Chapter IX - All provisions of this Chapter should be retained without change. However they are to be transferred to an Appendix and retain their current force pending action on Resolution 331 at a future competent WRC.**
- .2 Chapter NIX - Consequential amendments to take account of the above and various amendments to specific regulations to improve format and clarity.**

These are the procedures for distress and safety communications used by the maritime services. Chapter IX details the 'non-GMDSS procedures', Chapter N IX 'GMDSS procedures'.

Recommended Position - The movement of Chapter IX to an appendix is acceptable providing there is no change in status. With regard to the proposed amendments to Chapter NIX, these too are acceptable provided, again, there is no change in status

particularly following the movement of detailed information on the frequencies used in the GMDSS to an appendix.

5 VGE Rec 3/4 - Maritime Services

- .1 Article 55 - Major changes should be made in the format ... but with no change in substance.**

This article relates to the conditions appertaining to the issue of Radio Operator Certificates required to be held by Radio Operators under SOLAS/STCW.

Recommended Position - There should be no change in status of these certificates, particularly those certificates prescribed for non-GMDSS frequencies and techniques until 1999. The other modifications are acceptable.

- .2 Articles 56 and 57 - Should be retained with no change in substance. The provisions of Section II, Article 56, are to be transferred to new Appendices placing all the material relating to the non-GMDSS system together.**

These articles relate to the requirements of ITU apropos carriage of Radio Operators and their certification - mandated through SOLAS/STCW as well - for ship stations using the frequencies and techniques of the maritime services, and the inspection of ship stations.

Recommended Position - see comments on article 55.

- .3 There are several other detailed Recommendations relating to the maritime radio services. In summary, the provisions within the Radio Regulations which relate to operational requirements, other than distress and safety, are proposed to be incorporated by reference to appendices and/or ITU-R Recommendations.**

Recommended Position - although far reaching, these proposals would appear to have little or no direct influence on distress and safety communications and are acceptable.

ANNEX 19

DRAFT MSC CIRCULAR

**IMPLEMENTATION OF THE GLOBAL MARITIME DISTRESS
AND SAFETY SYSTEM (GMDSS) ON BOARD ALL SHIPS**

The Maritime Safety Committee, at its sixty-fifth session (9 to 17 May 1995), considered the matter of implementation of the GMDSS on board all ships.

The Committee, noting that corresponding requirements of the 1993 Torremolinos Protocol will apply to existing fishing vessels on 1 February 1999 or the date of the entry into force of the Protocol, whichever occurs later, recognized that non-compliance of existing fishing vessels and non-SOLAS ships with the relevant GMDSS requirements would create, in terms of safety levels, an undesirable difference between such ships on one hand and new fishing vessels and SOLAS ships on the other.

The Committee urged all Member Governments to assist in enhancing the safety of all ships and their crew at sea by encouraging all ships not subject to the 1974 SOLAS Convention or the 1993 Torremolinos Protocol to the 1977 Safety of Fishing Vessels Convention to be fitted for the GMDSS as soon as possible.

ANNEX 20

DRAFT LIAISON STATEMENT FROM IMO TO ITU-R STUDY GROUP 8

1 The IMO Sub-Committee on Radiocommunications (COM), at its fortieth session (16 to 20 January 1995), considered the change of the term "ship station identity" to "system code" in Recommendation ITU-R M.632-2, as shown in version B in Document 8152 (8D/TEMP/100).

2 The COM Sub-Committee agreed that Inmarsat should be permitted to use the system code together with a system to retrieve additional information for use by RCCs.

3 At its sixty-fifth session (9 to 17 May 1995) the Maritime Safety Committee endorsed this decision of the COM Sub-Committee and invited the ITU-R Study Group 8 to take action as appropriate.

ANNEX 21**DRAFT ASSEMBLY RESOLUTION****GUIDELINES FOR AVOIDING FALSE DISTRESS ALERTS**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization (IMO) concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety and the prevention and control of marine pollution from ships,

CONSIDERING problems reported by Member Governments related to the proper operation of the GMDSS, in particular that false distress alerts are becoming a major problem to the efficient operation of search and rescue (SAR) services,

RECALLING that the GMDSS was developed on the basis of resolution 6 to the International Conference on Maritime Search and Rescue, 1979 and that according to that resolution, the GMDSS should provide, among other things, the essential radio elements of the international SAR plan,

NOTING that the excessive amount of false distress alerts creates a serious and unnecessary burden on Rescue Co-ordination Centres (RCCs), may have adverse effects on seafarers' confidence in the GMDSS and could also have potentially serious effects on real distress situations and the safety of life at sea,

BEING AWARE that, if a substantive reduction in the number of false distress alerts now occurring is not achieved in the near future, the quality and efficiency of SAR organizations might be jeopardized,

CONSIDERING that an urgent dissemination of some of the problems which have become evident to rescue service providers would help in the education of people and organizations involved and eventually contribute to a reduction in the number of false distress alerts,

CONSIDERING ALSO that Administrations, manufacturers, educators, users, communication and rescue service providers and all others concerned need guidance on ways and means of reducing false distress alerts,

HAVING CONSIDERED the recommendations made by the Maritime Safety Committee at its [sixty-fifth] session,

1. **ADOPTS** the Guidelines for Avoiding False Distress Alerts, set out in the Annex to the present resolution;
2. **URGES** Governments to bring them to the attention of all concerned.

ANNEX

GUIDELINES FOR AVOIDING FALSE DISTRESS ALERTS

1 Administrations should:

- .1 inform shipowners and seafarers about the implications of the rising number of false distress alerts;
- .2 make important provisions for ships to properly register **all** GMDSS equipment, and ensure that this registration data is readily available to RCCs;
- .3 consider establishing and using national violation enforcement measures to prosecute those who:
 - .3.1 inadvertently transmit a false distress alert without proper cancellation, or who fail to respond to a distress alert due to misuse or negligence;
 - .3.2 repeatedly transmit false distress alerts; and
 - .3.3 deliberately transmit false distress alerts;
- .4 use the International Telecommunication Union violation reporting process for false distress alerts, or for failure to respond to a distress alert relayed from shore-to-ship;
- .5 ensure that all relevant ship personnel know how GMDSS equipment operates, the importance of avoiding false distress alerts and the necessary steps to be taken to prevent transmitting false distress alerts and the procedures to be followed when a false distress alert has been transmitted;
- .6 inform type-approval authorities of false distress alert problems to draw their attention to testing and alerting functions of radio equipment during the type approval process;
- .7 urge companies installing radio equipment to train relevant ship personnel to ensure they are familiar with operation of the installed equipment;
- .8 investigate the cause when a specific model of GMDSS equipment repeatedly transmits unwanted distress alerts and inform appropriate organizations accordingly;
- .9 ensure that surveyors and inspectors are informed about GMDSS equipment, and particularly how to operate and test it without transmitting a false distress alert; and
- .10 require that GMDSS radio operators be appropriately certificated.

2 Manufacturers, suppliers and installers should:

- .1 design equipment for distress alerting so that:
 - .1.1 it will not be possible to transmit a distress alert unintentionally;

- .1.2 the panel for emergency operation is separated from the one for normal operation and is partially fitted with a cover and the switches on the panel are clearly classified by colouring; and
 - .1.3 there are standardized arrangements of operation panels and operational procedures;
 - .2 design test features so that the testing of GMDSS equipment will not result in transmitting false distress alerts;
 - .3 ensure that any distress alert activation is indicated visually or acoustically, or both and shows that the equipment is transmitting a distress alert, until manually deactivated;
 - .4 ensure that the satellite EPIRB position on board, installations (including the release and activation mechanisms) and handling procedures preclude unwanted activation (designing the EPIRB so that when it is out of its bracket it must also be immersed in water to activate automatically. When operated manually a two-step activation action is required);
 - .5 provide clear and precise operational instructions that are easy to understand (maintenance and operational instructions should be separated, and should be delivered in English and any other language deemed necessary);
 - .6 ensure that when any GMDSS equipment has been installed, necessary instructions are given to appropriate ship personnel, specifically pointing out the operational procedures (a record should be kept that such instructions have been given); and
 - .7 ensure that supplier and installation personnel understand how the GMDSS works, and the consequences of transmitting a false distress alert.
- 3 Trainers and educators should:
- .1 ensure that maritime education centres are informed and teach about false distress alert problems and implications to SAR, the GMDSS, etc., and the procedures to be followed if a false distress alert is transmitted;
 - .2 obtain and use actual case histories as examples when teaching;
 - .3 emphasise the need to avoid false distress alerts in all maritime training and education; and
 - .4 ensure that no inadvertent transmission of a false distress alert occurs when training on GMDSS equipment.
- 4 Companies, Masters and seafarers should, as appropriate:
- .1 ensure that all GMDSS certificated personnel responsible for sending a distress alert have been instructed and are competent to operate the particular radio equipment on the ship;
 - .2 ensure that the person or persons responsible for communications during distress incidents give necessary instructions and information to all crew members who should know how to use GMDSS equipment to send a distress alert;

- .3 ensure that during each abandon ship drill instruction is given on how emergency equipment should be used to provide GMDSS functions;
- .4 ensure that GMDSS equipment testing is only undertaken under supervision of the person responsible for communications during distress incidents;
- .5 ensure that GMDSS equipment testing or drills are never allowed to cause false distress alerts;
- .6 ensure that encoded identities of satellite EPIRBs, which are used by SAR personnel responding to emergencies, are properly registered in a database accessible 24 hours per day or automatically provided to SAR authorities (masters should confirm that their EPIRBs have been registered with such a database to help SAR services identify the ship in the event of distress and rapidly obtain other information to help them respond appropriately);
- .7 ensure that EPIRB, Inmarsat and DSC registration data is immediately updated, if the ship's owner, name, flag or similar information changes, and, necessary action is taken to reprogramme the ships new data in the GMDSS equipment concerned;
- .8 ensure that, for new ships, positions for installing EPIRBs are considered at the earliest stage of ship design and construction;
- .9 ensure that satellite EPIRBs are carefully installed in accordance with manufacturers' instructions and using qualified personnel (sometimes satellite EPIRBs are damaged or broken due to improper handling or installation. They must be installed in a proper location to float free and automatically activate if the ship sinks. Care must be taken that they are not tampered with or accidentally activated. If the coding must be changed or the batteries serviced, manufacturers' requirements must be strictly followed. There have been cases of attaching EPIRB lanyards to the ship so the EPIRB cannot float free; the lanyards are only to be used by survivors for securing the EPIRB to a survival craft or person in water);
- .10 ensure that EPIRBs are not activated if assistance is already immediately available (EPIRBs are intended to call for assistance if the ship is unable to obtain help by other means, and to provide position information and homing signals for SAR units);
- .11 ensure that if a distress alert has been accidentally transmitted, the ship makes every reasonable attempt to communicate with the RCC by any means to cancel the false distress alert using the procedures given in the appendix;
- .12 ensure that, if possible, after emergency use, the EPIRB is retrieved and deactivated; and
- .13 ensure that when an EPIRB is damaged and needs to be disposed of, or if a ship is sold for scrap or for any other reason a satellite EPIRB will no longer be used, the satellite EPIRB is made inoperable by either removing its battery and if possible returning it to the manufacturer or by demolishing it.

Note: If the EPIRB is returned to the manufacturer it should be wrapped in tin foil to prevent transmission of signals during shipment.

APPENDIX

INSTRUCTIONS FOR MARINERS AND OTHERS** FOR CANCELLING A FALSE DISTRESS ALERT

DSC

1 VHF

- .1 switch off transmitter immediately*
- .2 switch equipment on and set to Channel 16
- .3 make broadcast to "All Stations" giving name of vessel, callsign and DSC number, and cancel the false distress alert.

Example

All Stations, All Stations, All Stations
This is NAME, CALLSIGN,
DSC NUMBER, POSITION.

Cancel my distress alert of
DATE, TIME, UTC.
= Master, NAME, CALLSIGN,
DSC NUMBER, DATE, TIME UTC.

2 MF

- .1 switch off equipment immediately*
- .2 switch equipment on and tune for radiotelephony transmission on 2,182 kHz

make broadcast to "All Stations" giving the vessel's name, callsign and DSC number, and cancel the false distress alert.

* This applies when the false alert is detected during transmission.

** Appropriate signals should precede these messages in accordance with the ITU Radio Regulations chapter NIX.

Example

All Stations, All Stations, All Stations
This is NAME, CALLSIGN,
DSC NUMBER, POSITION.

Cancel my distress alert of
DATE, TIME. UTC.
= Master NAME. CALLSIGN.
DSC NUMBER. DATE. TIME UTC.

3 HF

As for MF but the alert must be cancelled on all the frequency bands on which it was transmitted. Hence, in stage 2.2 the transmitter should be tuned consecutively to the radiotelephony distress frequencies in the 4, 6, 8, 12 and 16 MHz bands, as necessary.

Inmarsat-C

4 Notify the appropriate RCC to cancel the alert by sending a distress priority message via the same CES through which the false distress alert was sent.

Example of message

NAME, CALLSIGN, IDENTITY NUMBER,
POSITION,
Cancel my Inmarsat-C distress
alert of DATE, TIME, UTC
= Master +

EPIRBs

5 If, for any reason, an EPIRB is activated accidentally, the ship should contact the nearest coast station or an appropriate coast earth station or RCC and cancel the distress alert.

General

6 Notwithstanding the above, a ship may use any means available to them to inform the appropriate authorities that a false distress alert has been transmitted and should be cancelled.

7 No action will normally be taken against any ship or mariner for reporting and cancelling a false distress alert. However, in view of the serious consequences of false alerts, and the strict ban on their transmission, Governments may prosecute in cases of repeated violations.

ANNEX 22

**REVISED WORK PROGRAMME OF THE SUB-COMMITTEE
ON RADIOCOMMUNICATIONS**

		Target completion date
1	Role of the human element in maritime casualties	Continuous
2	Global maritime distress and safety system	
.1	work consequential to the 1988 GMDSS Conference	
.1.1	clarification of SOLAS GMDSS provisions	Continuous
.1.2	periodic review of SOLAS regulation IV/15.7 and resolution A.702(17)	Continuous
.1.3	review of the locating functions in the GMDSS	1996
.2	implementation of GMDSS requirements in respect of existing fishing vessels	1996
.3	matters relating to the GMDSS Master Plan	Continuous
.4	replies to questionnaire on casualties	Continuous
.5	exemptions from radio requirements	Continuous
.6	review of existing ships' safety standards	Continuous
3	Promulgation of maritime safety information (MSI) (in co-operation with ITU, IHO, WMO and Inmarsat)	
.1	operational and technical co-ordination provisions of MSI services	Continuous
.2	International SafetyNET Service	Continuous
.3	report of the Working Group on the Malacca Strait Area	1995
4	Performance standards for shipborne radio equipment and review of GMDSS equipment performance	Continuous

		Target completion date
	.1 criteria for use of shore-based Inmarsat facilities in the GMDSS	1995
	.2 battery life in two-way VHF radiotelephone apparatus	1995
	.3 guidelines for the on-board use and application of computers (co-ordinated by DE)	1996
5	ITU World Radiocommunication Conference matters	Continuous
	.1 regional satellites	1995
	.2 implementation of VGE recommendations	
6	Radiocommunication ITU-R Study Group 8 matters	Continuous
7	Satellite services (Inmarsat and COSPAS-SARSAT)	Continuous
8	International Code of Signals	Continuous
9	Ship identification:	
	.1 406 MHz EPIRBs (in co-operation with LSR)	1995 [1996]
	.2 1.6 GHz satellite EPIRBs	1995
	.3 ship station identification (SSI) numbers for DSC and SES	1996
	.4 VTS and identification transponders (in co-operation with NAV)	1995 [1996]
10	Emergency radiocommunications (in co-operation with LSR)	1996
	.1 false alerts and interference	1996
	.2 standard cellular telephone code for distress purposes	1995

		Target completion date
11	Review of resolution A.703(17) (in co-operation with STW)	Continuous
12	IMO Standard Marine Communication Phrases (co-ordinated by NAV)	1995 [1996]
13	Transmission of updating information for electronic navigational charts	1995 [1997]
14	Review of the INF Code	1996
15	Safety of passenger submersible craft (in co-operation with FP, NAV, DE and SLF)	1996
16	Review of resolutions A.534(13) and A.686(17)	1996
17	Review of reporting requirements in IMO instruments	1996